

**THE EFFECT OF TEACHER LED, SELF LEARNING,
PEER GROUP DISCUSSION AND MASS MEDIA
APPROACHES OF TEACHING POPULATION
EDUCATION TO CLASSES IX AND X
ON KNOWLEDGE, ATTITUDES AND
BELIEFS OF THE STUDENTS
ABOUT POPULATION
EXPLOSION IN
INDIA.**

ERIC SPONSORED PROJECT

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This project on experimental teaching of Population Education in High School Classes and determining its effect on Knowledge, Attitudes and Beliefs of the students with regard to Population ~~explosion~~ aspects was actually sanctioned by the Educational Research and Innovations Committee (popularly known as ERIC) in its sixth Meeting in the year 1977. The sanction was released vide No.F.23-2/77 Prog-I dated 28.12.1977. The Project was to be completed by 1979 but due to administrative snags and red tapism in the Regional College of Education, Bhopal where I was then posted the appointment of Junior Research Fellow took lot of time and typing and other facilities were hardly available, hence the inadvertant delay occured. In May 1979, I was transferred to Regional College of Education, Bhubaneswar hence the Project came to a stand-still. In November 1979, I was deputed to work as State Secretary of Madhya Pradesh Bharat Scouts and Guides, Bhopal. I requested ERIC to transfer the Project to me there which the then Director of NCERT was kind to order. However, in September, 1980 I was appointed Field Adviser for Madhya Pradesh in NCERT, Bhopal. I requested to allow the Project there which ERIC did. Since then the Project has been carried out in the Field Office of NCERT at Bhopal.

Due to many sided activities and programmes in the Field Office, it took longer to complete the Project than planned. ERIC always was considerate and liberal and accorded necessary approvals from time to time. Had ERIC not shown such a keen interest in this Project it would not have been completed.

I am happy that I showed patience and perseverance and never lost hope and today I am laying down the report of the Project before ERIC and through it to those interested in Population Education.

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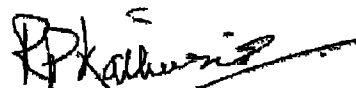
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Chapter - ONE

Population Explosion and India IP . 1- 39

Population Explosion; Population
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Nature ; Need ; Goals; What to
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the Problem ; Objectives ; Basis ;
Approaches ; Hypotheses ; Experimental
Procedure ; Research Design ; Data Analysis;
Significance of the Study; References.

Population Explosion and India

The story of mankind is the story of men and women influencing the course and flow of human history by shaping and changing the surface and destiny of the planet earth they inhabit. The first man Adam came to live on Earth. He needed a companion so came Eve. Since then a whole new world evolved. They created a family and soon families began to multiply. In old stone age extending to hundreds and thousands of years it was estimated at about ten million planet. Between 8000 BC to 6000 B.C. man learnt to grow food and began to support larger numbers. The discovery of agriculture helped him in creating settlements and habitations, as a result of which the human population increased to about 520 million by 1650 A.D. Thus fifty times increase was experienced between 7000 to 9000 years. In 200 years i.e. by 1850 this population doubled and reached more than one billion mark. In next 75 years in 1925 it doubled to 2 billion. In 1960 just in 35 years it became 3 billion. In 1980 just in 20 years it has reached 4.4 billion. If the trend continues, by 2000 World would have more than 6 billion people to support. Presently about 342000 babies are born each day in this world. 135,000 of them die leaving a net increase of about 207,000. By the weekend we have 1.5 million more people on this planet.

This unprecedented growth of world population has created a dilemma for the economists, demographers, scientists and the governments of the World. This growth trend is of recent origin. The accelerated rate of growth is viewed as a post-World War phenomenon and it is since 1920 that the rate of world population growth has accelerated. It is linked to post-War baby boom, but this phenomenon has not been uniform all over the World. Prior to 1900 A.D. the population of the developed regions of North America, Europe and USSR and the Pacific was growing at a faster rate than the developing regions of Africa, Asia and Latin America. Since 1920 the trend has reversed and the population of the developing nations have been growing faster than the developed nations. The estimated population in the less developed regions grew from 2 billion in 1960 to 3.28 billion in 1980 while the population growth in the developed

regions during the period increased from 1 billion to 1.13 billion.¹

According to United Nations estimates the world population could stabilize at 10.5 billion in the year 2110 which is more than twice larger than the present 1981 census figures. Out of this total of 10.5 billion about 9.1 billion people will be living in the third world countries and out of this 5.8 billion would be in Asia alone.²

Asia supports more than half of the World population but it has 75% population of world's less developed regions. Six of the ten most populous countries of the world, namely, China, India, Indonesia, Bangladesh, Pakistan and Japan are in Asia. After China's 750 million people, India is the second in the world with 683 million. India has 2.4 percent of the world's land area but supports 15.53% of its total population. It is interesting to compare that India is two fifth in area of the United States but has two and a half times its population.

The large population would not be a reason for great concern if the natural resources, employment opportunities, food, housing, health and other social services expanded at the rates commensurate with population growth. But it does not happen to be the case. The world population is unevenly distributed. The developed countries of the West have less population but lot of natural resources and compatible essential and social services. The developing nations of Asia on the other hand have huge ever-expanding populations but scarce natural resources and overstrained essential and other social services which are on the brink of breakdown. Their problems are many and serious. The basic needs of half of the population of the world, especially in the third world countries, is just not being met.

These nations are infested with poverty, malnutrition, illiteracy and ill-health. The economic and social tensions arising out of the population pressures permeate every aspect of quality of life. Crime and violence is on the increase. Ethical and moral values are getting eroded. Nothing seems to work and future looks bleak.

The Indian scene and situation in this regard serves as an example on the study of the proportions of population explosion and its consequential impacts. The fast growth of population in India is a recent phenomenon as can be evident from the Census figures -

Year	Population in million	Decadal growth rate in %	Increase in the Decade (million)	Yearly Increase (millions)
1901	238.3	-	-	-
1911	252.0	+ 5.75	+ 13.7	+ 1.37
1921	251.3	- 0.31	- 0.7	- 0.07
1931	278.9	+11 .00	+ 27.6	+ 2.76
1941	318.6	+ 14.22	+ 39.7	+ 3.97
1951	361.0	+ 13.31	+ 42.4	+ 4.24
1961	439.2	+ 21.51	+ 78.2	+ 7.82
1971	548.1	+ 24.80	+108.9	+10.89
1981	683.8	+ 24.75	+135.7	+13.57

(Source : Govt. of India : Census of India, 1981 Series 1, Page 1, p.13.)

The 1901 population in India took nearly sixty six years to double in 1966 but population in 1941 reached its nearly double mark in 1977 in 36 years. Thus we find that it is gradually taking less time to double the population and it is projected that by 2000 we will have one billion population if the present growth trend continues.

During the decade 1971-1981 net increase in our population has been 136 million thus average yearly increase in our population was 13.6 million which is just equal to the total population of Australia. This yearly increase can be somewhat balanced and given a present status of average quality of life if we can mobilize the following additional

resources each year:-

12,545,300 quintals of food per year

18,744,000 metres of cloth

2,509,000 houses

4,000,000 jobs

126,500 schools

372,500 teachers

These figures are quite alarming for any government even in a developed country what to speak of India. Thus growing numbers have created enormous and very complicated problems for us.

Besides population explosion in India, another important factor is that nearly fifty percent of our population is below the age of 18 years which actually means that they are economically dependent and unproductive. Greater expenditure on their food, clothing, shelter, health and education is needed till they become productive and earning members of the society. The nation can hardly meet this enormous burden and also loses the capacity to provide adequate employment to them when they grow up. This retardation of employment opportunity increases the dependency ratio. All this leads to distortions in economy resulting in endangering the social structure of the country.

India has made a remarkable progress in last three and a half decades. Commendable achievements are to its credit in agriculture ; industrialization and trade etc., but still in economic status in the world, it is rated among the lowest ten. Thus we find India as a country where population is rapidly growing, where natural resources are limited, illiteracy and poverty are prevalent and hunger has its free play. It all creates endless problems by way of high demands on our already replete resources leading to a breakdown level economy. Crux of all this is the fast multiplying population figures of India which if not contained soon will lead to utter chaos and anarchy.

Government is aware of the situation and it was in 1952 when it decided to encourage family planning and to control birth rates. The thrust in this direction and use of mass media etc., in turn has created a multitude of crises of values, relationship, welfare, migration and adjustments. Thus a strange conflicts confront the nation and everyone feels at a loss to reconcile.

Reconciliation in this regard it seems is possible by making the people understand the problems as they are and how they arose. Population education is a surest way of creating asareness not only of and about population but about all other related problems arising out of it.

Population Education : History and Definition

The idea of population education had its origin in 1941, when Alva Myrdal in her book " Nation and Family " attempted to convince the United States of America that population policy was nothing less than social policy at large. The role of education was seen as that of influencing children through the schools and adults through other educational agencies to appreciate national population goals. It is likely that Myrdal's book provided the inspiration for an article entitled, " A unit on the population of United States " by Kenneth Rehange in 1942 in " Social Education ". It was followed by an article by Frank Lorinor and Frederick Osborn in 1943 setting out the case for the inclusion of population issues in the social studies curriculum of the secondary schools. Nothing of note pertaining to the inclusion of population content in curricula happened during the next two decades.

Population education was reborn with the publication of an article entitled " The Population Explosion " by Warren S. Thompson in the March 1962 issue of " Teachers College Record " ³ and another article entitled " Population - Gap in the Curriculum " by Philip M. Hausar. ⁴ They were the first to urge the inclusion of population studies in the school curriculum. One of the pioneers to give concrete

shape to this programme in the field of education is Sloan Wayland, and the term "Population Education" appears to have been coined by him⁵.

He suggested the term "Population Education" to distinguish it from the terms "Sex Education" and "Family Life Education" which were in current use in the West before there was any concern about population studies. He thought these terms evoked negative responses from the educators and the public and moreover their content and focus were different. To him Population Education is concerned about the inclusion in the formal educational system of instructional settings in which young people will come to understand the circumstances which have led to the adoption of family planning as public policy and to understand that for the family and the nation family planning is possible and desirable. This would include an understanding of the relationship of population dynamics to economic and social development of the country and the implications of family size for the quality of life of the individual family⁶. Later on Wayland included "development of basic understanding of the process of human reproduction"⁶, also in it. This indicates that certain elements of sex education and family life education are also the part of Wayland's concept of population education.

Much of the current interest in population education has arisen from the need to reduce the rate of population growth in many parts of the world. Despite the family planning programmes, there has not been any perceptible decline in the birth rate. This may be so that the messages put out by the family planning agencies reach the adults only who probably already have a large family. This made it necessary to reach the new generation of school going children today who are the parents of tomorrow. Population Education purports to be a preparatory process for family planning. It is motivational in nature and is indirectly favourable to family planning attitude. It is a process through which the new generation will internalise the norm of a small family.

This approach is inherently different from that of family planning, where the student is not presented with a ready made course of action and asked to accept it. The choice of his course of action is developed during the process of coming to understand the population

problem and its interrelationship with various factors pertaining to the individual or national quality of life. Harold Howe writes "Population Education is not family planning or birth control education although these topics are related and relevant. Population Education is merely instructional in the dynamics of population without the emotionally charged areas of sex, birth control and family planning. The consequences of a rapidly growing population can be taught in an objective, non-sectarian manner without examining areas likely to raise governmental and parental opposition or to create discomfort among instructors. The content of population education is more palatable or less controversial for both the teacher and the taught. It is geared to the creation of a desire for information about these fields but with a more proper understanding of their function than has usually been encouraged before; it seeks to implant an understanding that a planned, small family is desirable if national and personal development are to be possible." 7

Edward W. Pohlman and K. Seshagiri Rao argue that while an understanding of sex gives a more complete picture to population education, it is not essential and that "one can teach about (1) population dynamics and the problems of overpopulation (2) advantages of small families and (3) advantages of later marriage without discussing sex or contraception in any way".⁸ They point out that the "population crisis is a matter of life or death urgency" and as such demands priority. They do not want to risk population education being involved in controversies about sex or contraception education, for they feel that parents and community leaders "who would accept population education alone will block any efforts to teach a combined programme". The trend of thought among education is to disassociate population education from sex education and family education so that its acceptance is ensured in the school curriculum. In the words of Pohlman and Rao, Population Education is now "clearly and loudly divorced from sex and family life education".

Unesco identifies Population Education "as an educational programme to develop in the learners (a) understanding of inter-relationships between population and quality of life (b) responsible attitude and behaviour towards population issues (c) skills in making rational decisions

about population related matters " ⁹. Though many attempts have been made to define population education yet there is no commonly accepted definition. Different definitions reflect the bias and the specific purposes of different authors and scholars. Viordernan emphasising the moral and ethical purpose of population education is to develop awareness and understanding of the relations between population growth and national development both in the short and long run; and to develop an understanding of the consequences of individual decisions in the important area of reproductive behaviour. A population awareness programme therefore, should provide the facts of population dynamics, of family life, of human reproduction that children will need. It should also show how the actions of each individual member of the society affect the others. This is the moral and ethical purpose of population education which is in addition to its informational and attitudinal goal. " ¹⁰

R.C. Sharma's view of population education suggests an ecological approach - " Population education is the study of human population in relation to his environment with a view to improve his quality of life without adversely affecting the environment " ¹¹. V.K.R.V.Rao, views Population Education as a part of human resource development programme - ' Population education should not be treated merely as a quantitative phenomenon or just an essay in numbers. It is the quality of the population that is most relevant both as a factor of growth and an end product of growth and numbers have to be treated in terms of the effect they have in quality either by way of deterioration or improvement. Population education, therefore, is essentially related to human resource development. Thus population education is not only concerned with population awareness but also with developing values and attitudes so that both the quality and quantity are taken care of " ¹²

D. Gopal Rao emphasized the individual decision making aspect of population education - " Population education may be defined as an educational programme which provides for a study of the population phenomena so as to enable the students to take rational decisions towards problems arising out of rapid population growth " ¹³

The most concise definition has been given by B.S. Parakh. He says "Population Education for all practical purposes may well be defined as a response of the educational community to the population situation as it obtains at a given point in time and at a given place or a region".¹⁴ We see that there are variations in definitions depending upon the differences of opinion on the relative weightage given to different aspects of Population Education. None of them, however, can be considered as comprehensive, NCERT follows the concept of Population Education as defined by the National Seminar on Population Education held in August 1969. The Seminar emphasized the aspect of human resource development, and clearly indicated that a comprehensive concept of population education should include knowledge about both the quality and quantity of population and the need to control them for happy human existence. "Population should not be treated merely as a quantitative phenomena or just an essay in numbers. It is the quality of the population that is most relevant both as factor of growth and an end product of growth and numbers have to be treated in terms of the effect they have on quality either by way of deterioration or of improvement".¹⁵ Thus population education besides being concerned with population awareness is also concerned with developing values and attitudes so that both quality and quantity are taken care of.

Nature of Population Education

Common belief in the present day world speaks of population as a problem. Small population hampers growth as the working force is scarce. Large population has surplus working force but resources become scarce as users are much more. The large population, however, would not have posed a concern if the natural resources, employment opportunities, food, housing, health and other social services were expending at the rates commensurate with population growth. The unplanned population growth tends to pose severe stress on the nation's resources and most of the social and public services. This has been the case in most of the developing countries. Imbalance created by poverty, malnutrition, illiteracy or ill-health persist, social tensions and population pressure

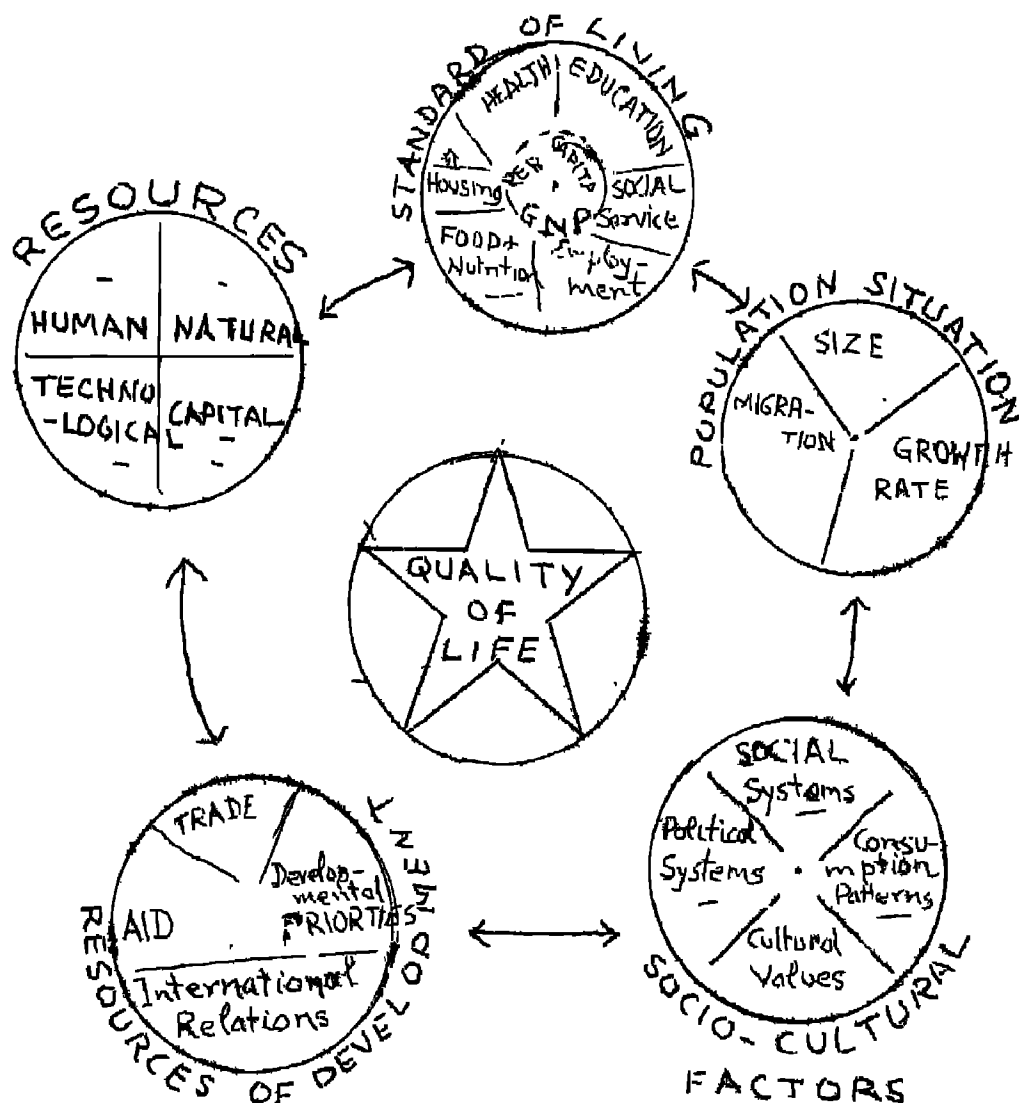
disparagingly affects the quality of life. Over-crowding in urban areas leads to increase in crimes, violence, squalor and a life full of dearths and tensions.

Population education is one of the intervention strategies for creating an awareness among the growing children about the growing population and the future that lies ahead for them. The concept of population education was born in 1941 with the publication of Alva Myrdal's book "Nation and Family" which tried to convince the Americans that population policy was not less than the social policy. Role of education was perceived to appreciate national population goals. Gradually the idea of population developed and was assimilated in the syllabi of school curricula in advanced countries.

Recently a common consensus has developed that the population should not be presented as a problem rather inter-relationship between population change and certain issues of quality of life such as food and nutrition, health, housing, education and employment etc., be studied and understood. It may be presented that population change is one important variable affecting the above areas. There can however be other factors also which will determine various aspects of quality of life. ¹⁶

The food and nutritional status of a country depends on its own land and water resources and their utilization, climate, technological know-how, selection of seeds, use of fertilizer, pesticides, weedicides, food habits and taboos, nutritional knowledge, population size, rate of growth and distribution. In relation to family also a similar analysis can be done. Population change (including family size) is one of the variables concerned, its importance will however be in its permissiveness as a factor having close relationship to nearly all quality of life issues and therein is the justification for population education.

The figure No.1 illustrates the inter-relationship among various factors which affect quality of life. Population education helps to understand the interrelationships of population factors in context to the efforts for total development.



INTERRELATIONSHIP AMONG FACTORS AFFECTING QUALITY OF LIFE

As population education emerged in response to population problem, it is but natural to think that it is to supplement family planning programmes. Some of the definitions of population education include words like; sex education, birth control and family planning education. In specific behavioural outcomes these definitions differ from acceptance of small family norm to a non-directive approach.

Another critical appraisal of population education is on psychological grounds that children coming from large families may feel frustration and rejection as a result of the pursuit of small family norm and accepting that " a small family is a happy family ". Such an assertion is not universally true as there are bigger families which are happier than small families.

All these different perceptions of population education have given rise to a number of issues involving much debate and discussion which centre around the following views:-

- a) Population is only one cause of poverty, and reduction of the population growth rate is no guarantee of social and economic progress. Population problem should be considered as an integral part of the total development progress and not in isolation.
- b) Population education should, therefore, stress the interrelationship between population dynamics and economic and social development, deal with both determinants and consequences of population and be viewed as a part of total social and economic planning.
- c) Population is not only a problem of poor non-industrialized countries. The consumption-based life style of the people in the industrialized countries have equally contributed to the problems of resource depletion , environmental deterioration and poverty. The population education programme should, therefore, be presented in a global framework but with a regional, national and local relevance.

An educational programme to develop in the learners-

- Understanding of interrelationships between population and quality of life.
- Responsible attitude and behaviour towards population issues.
- Skill in making rational decisions about population related matters.

The basic premise underlying the concept of population education is that the consequences of population change for the integrated development and vice versa are of such significance that the new generations of young people need to become aware of them.

Population education is the process of assisting individuals with due regard to their maturity:

- a) to acquire an understanding of the factors affecting selected aspects of quality of life in their bearing upon the individual and upon society, and to appreciate in particular the pervasive nature of population change as one of the most important of these factors;
- b) to acquire the ability to assess the quality of life implications, now and in the future, for oneself and others, of alternative actions, most especially those relating to population behaviour ;
- c) to develop attitudes, values, and skills conducive to responsible decision making and action with a view to enhancing quality of life for oneself and for others, now and in the future.
- d) to take such action in the immediate present as would lend to the enhancement of quality of life in those spheres of life in which such action is immediately possible; and in other matters, such as population related behaviour regarding which immediate action may not be possible, to resolve to act with due regard to the enhancement of quality of life when time and opportunity for such action come ". 18

Population education is not indoctrination. It is a process of assisting individuals to acquire certain understanding and abilities, and to develop attitudes, values, and skills consonant with the unexceptionable goal of enhancing quality of life.

Population education is an important curriculum innovation in the sense that to a greater extent than in most other subjects of the curriculum it draws its content from a number of disciplines and organises it around one or more unifying themes. The attempt at organisation opens new possibilities of thought and action for the contributing subjects themselves, as lacunae in them are revealed when they are viewed in the light of the new perspective. ¹⁴

Population education envisages developing in the learners capacity to assess the implications of various actions - personal as well as group - for the welfare of oneself and of others. The word others here means fellow human being wherever they be.

Population education has the characteristics of innovations spanning over distance and time. Energy consumption in the U.S.A. and the prices which the developed nations are prepared to pay for oil put the developing nations in the bay by reducing their buying capacity which reduces their development potential. This impedes the efforts of the Third World Countries to improve quality of life through higher productivity for which energy is prerequisite.

Population education encompasses a survey of the past, distant as well as recent, the immediate present, the near as well as the distant future, and in this sense spans over time in a unique manner. For example, in most Third World countries the large size of the population under 15 years of age at present and the consequent youth dependency burden, with the constraints which the latter places on the availability of saving for development purposes in the immediate present, are a product of reproductive behaviour in the past. At the same time, the population under 15 years of age at present carries with it a momentum for population growth in the future, and even if they confine the number of children to two, a rapid growth of population is inevitable for 50 to 60 years in the future on account of the in-built momentum residing in the present.

Another innovative feature of population education is its relevance to a set of life cycle decisions that are important for every individual. Whether to marry and when, when to have the first child, when to have any subsequent children and complete family size, and whether to migrate or not are important life cycle decisions for the making of which very useful insights may be derived from a course in population education. In this connection, it is relevant, for example, for everyone to be aware of the fact that medical evidence indicates the ages between 20 years and 30 years as the safest period for child birth from the point of view of the health and well-being of both the mother and the child. It is also important to know that risks increase with births over the third and also with pregnancy intervals shorter than two years.

Need for Population Education

The need for the institutionalisation of population education arose from the following factors:

1. POPULATION EXPLOSION : India is the most populous country, next to China . What is alarming further is the fast rate of growth of its population. During the last 10 years from 1961-1971, the population of India has increased in about 28 years. This means that another India would be added whose socio-economic needs will have to be fulfilled. It is next to impossible for a developing country like India to do so. Moreover, this enormous increase is bound to create other political, cultural and ethical repercussions. Not all the people of this country are aware of such implications and neither are they aware of the availability of scientific methods and techniques of postponing and avoiding births in their families. Besides, if people are aware of the population increase and the available methods of control, many of them are not yet fully convinced about the necessity of bringing down the birth-rate of the country. The population of a country can be made stable only when the difference between the birth rates and death rates is reduced to minimum. All this makes it imperative to make the people aware of the phenomena of " Population " in its interrelationship with the other socio-economic variables.

2. AGE COMPOSITION : Population Education in Indian schools is particularly significant since about 42 per cent of its population is below fifteen years of age. This preponderance of the young population means that the bulk of our population is economically dependent which indirectly affects the per capita income which is already very low. Moreover, with larger proportions of the population entering into reproductive age groups, there is bound to be a faster increase in the next few decades, which will have further consequences on the country's economy. Considering this significant demographic aspect, it was proposed to introduce population education at the elementary and the secondary school levels. In order to effect any significant change in the rate of growth of population it was important to inculcate in the future parents the right attitudes which would favour small family norms. Population education will bring about awareness of population problems at an early age so that by the time they reach the reproductive age, they will be able to take rational decisions. "It is here that population education becomes relevant as a motivational instrument that will inject these new entrants with a desire to adopt family planning as way of life. It is through population education that we may strengthen and enlarge the area of commitment towards checking population growth by developing right attitudes amongst the vast population which has yet to enter fertility age group".²⁰
- A National Seminar on Population Education was organised by the Ministry of Education in collaboration with the Ministry of Health and Family Planning on August 2-3, 1969; and the eminent educationists and state educational authorities informally recommended that population education should be introduced in the entire school stage curriculum.
3. POPULATION AND DEVELOPMENT : Even after 36 years of India's Independence, 60% of the people of India live below the poverty line. This is inspite of the fact that the country has made considerable progress as a whole, in terms of food production, technological advancement, education, health care etc., The reason for this discrepancy is the alarming rate of population growth. The fruits of development are not enough for the growing numbers and hence the per capita income has not risen in proportion to the national income. Population education will enable the students to understand all these phenomena in their right perspective and help to develop responsible attitudes and behaviour towards population issues.

4. POPULATION AND ENVIRONMENT : It is time we took cognizance of our fast depleting natural resources. Indiscriminate clearing of forests, and mining and drilling for minerals has to be checked, to maintain nature's ecological balance. Large scale pollution of water, air, and soil has led to the deterioration of the environment. This will inevitably lead not only to ecological disturbances but serious health problems and consequently a deteriorating quality of life. The children need to be made aware of this to help them develop " an attitude that would promote conservation of nature, environment and natural resources, avoid wastage and promote increasing use of renewable resources in place of those that are exhaustible to help children appreciate the significance of economy based on recycling of resources and thereby keeping the wastage of resources to the minimum " ²¹
5. DEVELOPMENT OF NEW VALUES : Since population education is not a culture - free area and is essentially value-oriented, it is but natural that the school should play an important role in development of new values in the society, rather patiently and systematically so that the pace of its development can be accelerated " ²² Prof. B.S. Parakh in his paper " Ethics of Population Education " defines the values which population education aims to uphold and reinforce. ²³ According to him population education wants to strengthen the " universal and eternal values of humanity and the institutions of marriage and family which sanctify these values. Besides this, population education wants to generate new values as well " One of the most important values it wants to introduce and develop is the concern for quality against quantity. It wants few children in a family so that they can be best looked after making it possible for the family to make the best possible use of the latest findings in child care, nutrition, preventive medicine, and new gadgets that would accelerate the intellectual and emotional growth of every child to the best of its innate capacity " ²⁴ It would promote more socially oriented values with a focus on planning for the future, rather than selfish individualistic concerns.

Goals of Population Education

" The role of education is to endow learners with the kinds of tools that will help them understand the various aspects of any given phenomenon. This is precisely the goal that population education sets for itself. It proposes to help the learners to define and understand the nature, causes, and consequences of demographic phenomena and their inter-relationships with the realities of economic, social and cultural development. " 25

Involving the students in a learning process, would not only enable them to understand the population related issues but put them in a position where they would be able to make ' better informed decisions ' on population related matters which would be personally meaningful & socially relevant. This means; that instead of the student being presented with a ready made course of action his decisions would be developed during the process of learning. This also means that " Population education is not an attempt at indoctrination. It is a process of assisting individuals to acquire certain understandings and abilities, and to develop attitudes, values, and skills consonant with the unexceptionable goal of enhancing quality of life ". 26

In addition, the learners would be able to make informed and responsible decisions based on their own assessments, and participate in collective decisions which help promote social development.

Therefore, population education is not only imparting knowledge about the population dilemma, it is preparation of the young people to accept the norm of small family and to act accordingly in future.

There seems to be no consensus on the goals of population education just as there is no consensus on the definition of population education. Different scholars have emphasised different aspects as its main goal. The proposed emphasis of the Indian programme was described by the Minister of Education : " Population Education at least as I see it, is primarily a motivational force for creating the right attitudes to family size and the need for family planning and should not be mixed up with sex education or knowledge of family planning methods " 27

In 1962, the sociologist and demographer, Hausen, stressing the importance of introducing demography in the school curriculum, stated "..... The inclusion of demography in the curriculum would provide the person with a framework for understanding himself in the context of successively larger aggregations and associations of mankind, in the same manner that astronomy provides a context in which the solar system and this planet may be better understood, as a member of the animal kingdom." ²⁸

The National Seminar on Population Education held at Bombay (India) in August, 1969, have stated the objectives in two of its recommendations;

" 1. The objective of population education should be to enable the students to understand that the family size is controllable, that the population limitations can facilitate the development of a higher quality of life in the nation and that a small family size can contribute materially to the quality of living for the individual family. It should also enable the students to appreciate the fact that, for preserving the health and welfare of the members of the family, to ensure the economic stability of the family and to assure good prospects for the young generation, the Indian families of today, should be small and compact, with only two or three children.

2. Students at all levels have a right to accurate information about the effect of changes in family size and in national population on the individual, the family and the nation so that this body of knowledge is utilised to control family size and national population with beneficial impact on the economic development of the nation and the welfare of the individual families." ²⁹ This view point lays stress on quality of life and development. B.S. Parakh too emphasises the developmental aspect of population education - " The goal of population education is to contribute its little mite towards a quick but all sides development of an individual, a family and the society at large by helping them to raise the quality of life Population education would have to identify superstitions, beliefs, values and attitudes embedded in folk demography and work patiently and deftly for their removal or eradication Thus development provides a total framework for population education to become a living or a lively subject. " ³⁰

According to D. Gopal Rao, " The goals of a population education programme in schools may be stated as follows :

- (a) To develop an understanding of the factors causing rapid population growth and an appreciation of the inter- relationships between population change and quality of life.
- (b) To develop responsible attitude towards population related issues and to act in accordance with such attitudes.
- (c) To develop an understanding of the population policies and programmes of one's own country and to contribute towards their attainment "

Further summing it up he says that " The focus on the development of responsible attitudes and action is central to population education and holds the key to the success of the programme. " 31

What to teach in Population Education

" Population Education, being of recent origin, has no clearly marked content boundaries. It is inter-disciplinary in nature and related to various subjects. The problem of overcrowded curriculum makes it difficult to establish population education as an independent subject in schools. The countries have therefore used an integration approach to include population education concepts in different subject areas ".³²
The National Seminar on Population Education held at Bombay in August 1969, recommended the integration approach and the arguments presented in its favour are :-

- (i) the curriculum is already over-crowded
- (ii) the demands of traditional subjects are increasing because of the explosion of knowledge.
- (iii) children will probably learn more if they are confronted with relevant population material . Although the integration approach is being used by all the Asian countries who are running population education programmes, its purposefulness is being debated and hence some countries have started thinking of introducing it as a separate subject in schools.

The curricula in population education in different countries have been developed on the basis of their different approaches and their socio-cultural as well as educational needs. For example, the curricula in population education of the Republic of Korea and the Philippines include content relating to sexuality and family planning whereas other countries have avoided them because of socio-cultural factors. This is a case of Asian countries. So far as developed and developing countries are concerned, the economic disparities being enormous, the population problem is of different nature. It is common knowledge that developed countries with developed economies based on high levels of technology enjoy a high standard of living and therefore their main concern is not development or economic growth, but to maintain their present standard of living, in the context of their fast depleting natural resources, ecological imbalance and serious environmental pollution. In contrast, developing countries including India, face the challenge of raising their current standards of living which needless to say are dismally low. In India, the official figure of 50% of the population being under the poverty line is staggering to say the least. While it is true that courses in population education should have their major focus on one's own country, it should also include global issues that are significant and "not entirely irrelevant to one's own country". For example, "energy consumption in the U.S.A. or Europe, and the prices that the developed countries are prepared to pay for oil reduce the energy buying capacity of many Third World Countries, and impede their efforts to improve quality of life through achieving a higher productivity for which energy is in some cases a pre-requisite" ³³

Population Education is considered an important curriculum innovation in the sense that its content is drawn from a number of disciplines, which is then organised around the primary and related items. "The attempt at organisation opens new possibilities of thought and action for the contributing subjects themselves, as lacunae in them are revealed when they are viewed in the light of the new perspective" ³⁴

"Population education has also the characteristic of being an innovation that spans over distance and time population education encompasses a survey of the past, distant as well as recent, the immediate present, the near as well as the distant future, and in this sense spans over time in a unique manner" ³⁵ For example, in most Third World Countries the large

proportion of population under 15 years of age at present, is a result of the reproduction behaviour in the past. While its present implications are youth dependency and constraints on the investment for developmental purposes, its future significance is that this vast under 15 years of age population will make a rapid growth of population inevitable for 50 to 60 years in the future, since it "carries with it an in-built momentum for population growth". Another innovative feature of population education is its relevance to life problems and issues and consequent life decisions that are important for every individual. It therefore challenges students to creative thinking and action in relation to these issues, by providing an insight into the complexities of marriage, family size, number of children, spacing of children, health of the mother, pregnancy, risks and so on.

The major areas identified in the workshop on Population Education held in July 1970 at Delhi are : ^{3b}

1. The population growth
2. Economic development and population
3. Social development and population
4. Health, nutrition and population
5. Biological factors - family life and population. This has been dealt with in detail in the draft syllabus of NCERT.³⁷ The various subjects into which it would be integrated at the elementary and secondary school levels are, social studies, environmental studies, general science, mathematics and languages.

The Regional Seminar on Population and Family Life Education held in 1970 at Bangkok also identified five major components of population education, which are - ³⁸

1. Determinants of population growth
2. Demography or the Population Situation
3. The consequences of Population Growth
4. Human reproduction and
5. Family Planning policies and programmes.

The first three form the non-controversial core of any population education programme and the latter two form the controversial parts of what is termed as sex education. By and large the major components of sex education consists of (a) human physiology and reproduction, (b) contraception (c) social interaction associated with human sexuality. In the Indian context, the inclusion of the area of 'human reproduction' in population education does not seem to arouse much controversy since it has already been included in the Biology Courses. So far as contraception and social interaction are concerned, there seems to be quite good opposition to its inclusion, on moral and medical grounds.

The draft syllabus prepared by NCERT, New Delhi, besides including the non-controversial topics also includes content related to reproduction in man, stages of growth, physical differences in male and female, physical changes at puberty, mensural hygiene, nectoral emissions, emotional changes at adolescent age, hormonal control of reproduction, healthy sex relations, parenthood etc.

How to Teach Population Education

There are at least two main components of teaching, namely content and method "The way in which a child learns about population may be just as important as what he learns about it".³⁹ Most teachers are familiar with the teacher directed methods which are prevalent in most of the educational institutions, in comparison to the student managed methods. Recently studies are being conducted to explore into the effectiveness of non-curricular teaching methods. And it is thought that since the area of population education is by its nature problem oriented and value-laden, the methods of inquiry and the other student-managed methods are more appropriate. A programme that helps a child to learn how to learn, how to investigate and act on problems, will have a greater impact on the attitudes and beliefs of children, than a teacher led approach where knowledge and data is poured into the child without the necessity for him to use his intellect. We know in the ultimate analysis the goals of population education are to (i) enable the learners to extend their understanding of populated-related problems (ii) develop appropriate thinking skills in analysing population issues; and (iii) develop desirable population related attitudes. Therefore in the teaching of population education the use of various methodologies and techniques are suggested which are expected to help the students understand all aspects of the population situation and then arrive at their own conclusions and decisions.⁴⁰

By and in itself no particular training method is superior to all other methods. Each one has its own strength and limitations. The desirability of a particular training method (or of a combination of methods) is a question to be determined in relation to a number of factors:- ⁴¹

1. the nature of a specific instructional objective.
2. the situation in which teaching-learning interaction is to take place.
3. the role the learner is expected to play in the training process;
4. the extent of support available in terms of learning materials and facilities.

5. the level of familiarity and mastery of various methods on the part of the training instructor.

Teachers habitually use the same approach for practically all sorts of training objectives, in all kinds of learning situations and with all types of audience.⁴² This may be due to the traditional climate that resists change, or to the lack of leadership that would encourage and motivate the use of new methodologies; or more importantly to the information gap that a variety of methods exists.

A range of methodologies are given below for teaching population education, and it upto the teachers to select them and use them effectively.

1. Lecture and lecture discussions.
2. Student seminars; group discussions; panel discussions; debates.
3. Field work and surveys, using questionnaires and interviews.
4. Case Studies- This method is especially effective in the study of personal & family relations, child development, home management. They may be used as a basis for group discussions or serve as the basis for role playing.
5. Role-playing - This features the spontaneous enactment or dramatisation of a situation. The action comes from the students' creative use of his own feelings and imagination. It offers an excellent means of bringing out into the open emotional problems. Here unlike the drama, no script, no memorization and no rehearsals are needed.
6. Drama, skit-script technique - The script is prepared and then presented in the form of a skit or a short play. Unlike role-playing the skit has to be memorised and rehearsed.
7. Value - Clarification Strategies - The goal of this method is to enable learners to explore the connection between the subject matter and their own feelings, attitudes and behaviour. A number of value-clarification models have been evolved and the most widely used is that of Louis Rath.⁴³
8. Brain Storming - This is a technique used in solving various kinds of problems. It lists all the ideas regarding the solution of problem, without evaluating or judging them in any way.

9. Buzz Session - This is an effective technique for increasing individual discussion. The situations in which it is particularly valuable is -
- (a) when some members are unable to express themselves in a large group. Small groups stimulate individual thinking.
 - (b) When time is short. This is a rapid procedure for pooling ideas.
 - (c) Following a movie or a filmstrip. Most films are provocative enough to start a buzz group session.
10. Use of springboards - Spring boards are thought - provoking materials on a topic which motivate students into conducting an inquiry on the subject. Statements which present controversial, opposing or incompatible positions form excellent spring boards.
11. Films, film strips, and other audio-visual aids.
12. Self-Learning- There are at least two ways in which self-learning can be done, namely (1) self-study and self-reflection on the issues/topics contained in the self-study module , (2) directed self-study under the guidance of a module manager followed by group discussion. In the latter the trainer/supervisor/headmaster/headmistress may act as the manager.

As discussed above, there are several approaches of teaching this essential but touchy subject. The ordinary classroom approach cannot develop the desired attitudes and beliefs with regard to population behaviour. Different other approaches have also to be tried and compared to this commonly adopted classroom approach. Keeping this in view a project was submitted to ERIC for approval and necessary finance. The project was approved and needed financial support has all through been provided by the ERIC Committee of the NCERT.

Statement of the Problem: The Project problem is stated as :

THE EFFECT OF TEACHER LED AND THREE OTHER CLASSROOM APPROACHES OF TEACHING POPULATION EDUCATION ON CLASSES IX AND X OF THE 10 + 2 PATTERN ON THE KNOWLEDGE, ATTITUDES AND BELIEFS ABOUT POPULATION EXPLOSION IN INDIA.

Objectives of the Study : The objectives of this study are to experiment and determine as to which approach of teaching Population Education is more effective in bringing about the desired changes in the knowledge, attitudes and beliefs and the behaviour of our younger generation who would soon occupy our places and will join ranks with the reproductive couples and swell the population of this already over populated country. The aim is to discover a very effective approach through which knowledge is imparted to bring changes in their beliefs and to create in them a positive attitude towards the necessity of checking the unwanted population growth by all possible means. This approach can then be constantly used to bring about a healthy change in their behaviour which in times to come will help the nation overcome this very serious problem which has endangered the very existence of this beautiful country.

Basis of the Study : The Teaching Units were developed on the basis of the ones prepared by the NCERT and the Textbook of Population Education for the Secondary Schools developed by Dr.R.K.Dhan. The lessons and the Visual Instructional Material ^{were} developed by the investigating team for use during this experimental study. Teaching-Learning Guides, Charts, Models, films, slides, Programmed Lessons, Visual materials etc., were used in the classrooms in a very limited and planned manner. The pre-test and post-test data was recorded.

The following approaches were tested through experimental process.

1. Teacher Led : Unit and Teaching Plans were developed and used in the classroom situations by the teachers selected for the conduct of this classroom approach. These teachers were duly oriented in Population Education and the process to be used.
2. Peer Led : The Teaching-Learning guides alongwith the material to be used by the peer group was developed and made available. The teachers using this approach were oriented in population education and the use of this approach. The students record book and the leaders record sheets were developed and used.
3. Self Instruction : Programmed lessons dealing with the units on population education were prepared after due testing and finalising. The self-instructional material was developed and the correct answers of questions asked on the concepts or information conveyed were given at the lower end of the page. The teachers using this approach were also oriented suitably.
4. Mass Media Approach : The teaching units remained the same and students were required to do individual study but slide-tape programme of NCERT, Population Education films from FPAI (Family Planning Association of India), posters, charts and other display material was duly shown and exhibited in the classroom. Teachers using this approach were oriented and provided the necessary support.

The teaching units of Population Education were the same in the four approaches while the teachers and the students for every approach experiment were different and generally kept away from one another. The sample chosen for this study was students (boys and girls) studying in Classes IX and X of 50 Secondary Schools scattered mostly in Bhopal Division and a few in Betul District. Out of these 14 Schools adopted Teacher Led Approach, 13 adopted Peer Group Method, 9 had Mass Media Approach while 14 used Self-Instructional Method.

The number of students involved was 247 in Teacher led, 191 in Self-instructional, 203 in Peer Group and 200 in Mass Media approach. The number of schools which actually participated in this research activity and sustained the interest till the end was less than what was proposed. In teacher led approach 6, in Self-Instructional 5, in Peer Group 6 and in Mass Media approach 5 schools were finally involved. Thus the number of participating schools dropped to less than 50% and so did the number of students.

HYPOTHESES :

The study comprised of three ~~distinct~~ areas which were studied with regard to approaches of teaching Population Education and were compared with different variables and their impact on Knowledge, Attitudes and Beliefs was studied. The following null hypotheses in Knowledge, Attitudes and Beliefs were proposed :-

- Ho.1 (K - 1) There is no difference in the four Approaches of Teaching Population Education with regard to gain in Population Education.
- Ho.2 (K - 2) The gain in Population Education knowledge is not affected by residential background i.e. rural or urban habitat of students.
- Ho.3 (K - 3) The gain in Population Education Knowledge is not affected by the sex of the students.
- No.4 (K - 4) The gain in Knowledge of Population Education is not affected by the interaction patterns among the Teaching Approaches, residential background and sex of the students.

- Ho.5 (K - 5) The Knowledge of Population Education is not affected by the number of brothers the students have.
- No.6 (K - 6) The Knowledge of Population Education is not affected by the interaction patterns of four approaches of teaching with the number of brothers the students have.
- ~~No.7 (K - 7)~~ The Knowledge of Population Education is not affected by the number of sisters the students have.
- Ho.8 (K - 8) The Knowledge of Population ~~Education is not affected by~~ the interaction between Approaches of teaching and the number of sisters the students have.
- No.9 (K - 9) Mother's education has no effect on the Knowledge of Population Education of the students.
- Ho.10 (K - 10) The Knowledge of Population Education among the students is not affected by the interaction patterns of approaches with the levels of their mother's education.
- No.11 (K - 11) Father's education has no effect on the knowledge of Population Education of the students.
- Ho.12 (K - 12) The knowledge of Population Education among the students is not affected by the interaction patterns of Approaches of Teaching with the levels of their Father's education.
- Ho.13 (A - 1) The four Approaches of Teaching Population Education make no difference in regard to the development of Attitudes.
- Ho.14 (A - 2) The development of Attitudes is not affected by residential background i.e. rural or urban habitat of students.
- Ho.15 (A - 3) The development of Attitudes is not affected by the sex of the students.
- Ho.16 (A - 4) The development of Attitudes about Population Education is not affected by the interaction among the four Approaches of Teaching, Residential background and sex of the students.
- Ho.17 (A - 5) The Attitude towards population education is not affected by the number of brothers the students have.

- Ho.18 (A - 6) The Attitudes towards Population Education are not affected by the interaction patterns of Approaches of Teaching with the number of brothers the students have.
- Ho.19 (A - 7) The Attitudes are not affected in relation to number of sisters the students have.
- Ho.20 (A - 8) The Attitudes on Population Education are not affected by the interaction patterns of Approaches of Teaching with the number of sisters the students have.
- Ho.21 (A - 9) The Attitudes of the students are not affected by the level of their Mother's Education.
- Ho.22 (A - 10) The Attitudes of the students are not affected by the interaction of Approaches of Teaching Population Education with the education of students' mothers.
- Ho.23 (A - 11) The Attitudes are not affected by the level of Education of students' father's.
- Ho.24 (A - 12) The Attitudes of the students are not affected by the interpretation of Approaches of Teaching Population Education with the Father's education.
- Ho.25 (B - 1) In regard to developing Beliefs, there is no difference among the Approaches of Teaching Population Education.
- Ho.26 (B - 2) The residential background has no effect on the Beliefs about Population Education.
- Ho.27 (B - 3) The sex of the students has no effect on their beliefs regarding Population Education.
- Ho.28 (B - 4) The beliefs are not affected by the interaction of Approaches of Teaching Population Education, residential background and sex of the students.
- Ho.29 (B - 5) The number of brothers do not affect the beliefs of the students.
- Ho.30 (B - 6) The beliefs of the students do not differ by interaction of Approaches of Teaching Population Education with the number of brothers they have.

- Ho.31 (B - 7) The number of sisters do not affect the beliefs of the students regarding Population Education.
- Ho.32 (B - 8) The beliefs of the students do not differ by interaction of Approaches of Teaching Population Education with the number of sisters they have.
- Ho.33 (B - 9) The beliefs are not affected by the level Mother's Education.
- Ho.34 (B - 10) The beliefs of the students are not affected by the interaction of Approaches of Teaching Population Education with the level of education of students' mothers.
- Ho.35 (B - 11) The beliefs are not affected by the level of education of students' fathers.
- Ho.36 (B - 12) The beliefs of the students are not affected by the interaction of Approaches of Teaching Population Education with the Father's Education.

EXPERIMENTAL PROCEDURE :

A promise of this study holds that a classroom situation carefully designed in terms of organisation of subject matter, selection of teaching materials and optional utilization of teaching techniques would provide a basis for the most effective teaching learning experiences. Moreover, it is held that such an approach will result in the desired educational changes in terms of knowledge, attitudes and beliefs about population growth. In order to evaluate such a programme, study was conducted using the developed units on population education. This experiment was designed to test the effects of four different educational approaches - knowledge, attitudes and beliefs regarding Population Education with IX and X class students.

Each of the approaches use the same curriculum material and sequence of lessons. This is done in order to hold constant the influence of the materials in each of the experimental groups while varying the educational approaches. The intent of the study design was to develop three approaches : Self Instructional, Peer Group and Mass Media besides the Teacher Led Approach and use them in the

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classroom situations; measure their effects upon knowledge, attitudes and beliefs of the students. There is a pre-test and the post-test with the Knowledge, Attitude and Belief Tests of Population Education. These were developed by the project team before the commencement of the experiment.

RESEARCH DESIGN:

A 4 x 4 factorial design (fig.1) with multivariate analysis of variance for unequal cells will be employed. Such a design is necessary in order to test for the possible existence of certain inter-relationships between two or more of the experimental variables. Sheffe's 't' test will also be employed for establishing further contrasts.

FACTORIAL DESIGN FOR THE CLASSROOM EXPERIMENT IN POPULATION EDUCATION

		B. APPROACH FACTORS.			
A. FACTORS		Teacher Led	Peer Led	Self Instruction	Individual Study
Area / Sex ; Habitat					
URBAN Boys Girls		Teacher Led	Peer Led	Self.Inst.	Ind. St.
RURAL Boys : Girls		Teacher Led	Peer Led	Self. Inst.	Ind. St.

Curriculum Materials and the Lesson Sequences remain the same for all the approaches.

DATA ANALYSIS :

Data gathered during the experiment is to be analysed and presented in conveniently readable tables to make the results and conclusions commonly understandable. The computer assistance , if necessary will be taken.

SIGNIFICANCE OF THE STUDY

This study is unique of its kind not only in India but also in South East Asian Region which is faced with very grave population problems. In India it will be the first study in approaches of teaching Population Education with aims of bringing about changes in the attitudes and beliefs of the future population of India. This study is supposed to break new grounds and would establish the utility of our approaches of teaching Population Education in regard to creating an effect on the behavioral patterns of the students.

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~~Revised~~ - TWO

2. Review of Previous Studies PP. 40 - 53

REVIEW OF PREVIOUS STUDIES

The Population Education is a new area of studies and so there is not much research to its credit. However, during past a decade and half the subject has attracted a lot of attention and some work has been done under the Family Planning Association of India, NCERT and some of the Universities in the country. Here the studies on Knowledge and Attitude towards Population Education are being reviewed because this Project is primarily concerned with the knowledge, attitudes and beliefs of the students of secondary schools and moreover, the studies on methods of teaching will also be reviewed as the main aim of this study is to determine methods of teaching Population Education which can contribute the most towards knowledge, attitudes and beliefs in the students with regard to Population explosion and thus develop in them an insight in the population problems and also modify their behaviour with regard to their family lives and fertility.

1. In 1970 under the Michigan Population Project at M.S. University of Baroda, Mr.T.Poffenberger made a study of the knowledge and attitudes of Indian college students towards population related problems. His study was confined to college students both boys and girls of Delhi University and administered a Questionnaire to elicit their opinion. He also interviewed some of the students:-

(1) Ninety six percent of boys and 100 percent of girls agreed with the statement that the population of India was growing too rapidly.

(2) Eighty three percent of boys and 92 percent of girls agreed that the population problem was serious.

(3) While the respondents indicated that they favoured a small family norm propagated by the Government of India in the interest of the nation, a few favoured a small family motivated by the welfare of the individual families.

(4) The average number of children desired by the boys was 2.6 while the average number desired by the girls was 2.2.

(5) The majority of boys and girls wanted atleast one son among the children.

(6) While most of the girls approved family planning methods, 19% of the boys disapproved because they believed that the methods were unnatural and dangerous.

2. Thomas Poffenberger in 1971 made another study on the Population learning among the secondary school students in an Indian village. In this study he involved 100 students of XI class of a village secondary school in Baroda District. The method used were surveyed through a Questionnaire followed by interviews.

Findings: (1) The village secondary school students were well aware of the population problem.

(2) They imbibed the knowledge about population problem through the mass media particularly newspapers and also through extension education efforts of the family planning programme such as film shows, exhibitions and the visits of family planning workers to homes.

(3) The students voted in favour of a small family and this was mainly prompted by the difficulty experienced by their parents in rearing a large family.

3. Kalyan R. Salkar of Teachers College, Goa studied population awareness among the school students of Standard VII to XI in Goa. He also alongwith the study made a study of the reactions of parents and teachers towards introduction of population education in school curricula. His students sample consisted of 2039 students of standard VII to XI studying in Goa District. The techniques used by Salkar consisted of Opinioneer consisting of 19 items for the students. His findings were that:-

(1) Majority of Goan students were aware of the population problem in the country.

(2) They were willing to learn about population.

(3) Nearly 50% of them desired to learn it as a subject included in the School Curricula.

Salkar earned Ph.D. Degree from the University of Bombay in 1974.

4. Vittal Bai R. Patel of Gujarat University in 1974 made a study of population awareness of pupils of standard X at Varnama High School in Gujarat. The objectives of the study was to assess the awareness of the students about population problems and to find out their lives aspirations. In this study 50 students between age group 15-20 were involved. The technique adopted was an interview schedule. His findings are:-

(1) Students in general were aware of the population problem faced by the country.

(2) Most of the students were not aware of the importance of the family planning programmes.

(3) Whereas most of the girls wished to live and serve in the city, nearly half of the number of boys were willing to live in a village, but serve in the city.

(4) A good number of students considered late marriage as an advantage.

(5) The students did not have independent decision regarding the age at marriage and selection of mate.

(6) The students had favourable attitude towards education in general.

(7) Most of the boys did not favour higher education for the daughters whereas the girls wanted to have higher education.

(8) Most of the students believed in the traditional value of having more

(9) In most cases, students did not discuss the family problems with parents.

(10) Girl students were more knowledgeable about family planning than boys.

5. In 1975 S.L. Nagda and his group from the Population Study Centre of Sri Venkateswara University, Tirupati made a survey of the perspective of the students of Womens' Colleges towards the Population Education. 200 girl students of Women's College, Nellore

in Andhra Pradesh were involved in this study, out of which 80% were urban and 20% were from rural areas. The technique adopted was a Questionnaire. The findings were:-

- (1) Seventy five percent of the girls knew the meaning of population explosion.
- (2) More than 65 percent of the girls considered population education and family planning as identical.
- (3) Ninety percent of them expressed that our country cannot meet the growing needs of its people if the population continues to grow at the present rate.
- (4) Ninety percent of them felt that a small size family would lead to happy and comfortable life. Most of the students agreed that population education is necessary for the youth for initiating responsible parenthood.
- (5) Most of the students agreed that the size of the family can be planned by a human being.
- (6) Most of the girls opined that sufficient gap between two successive children is necessary for the health of the mother and the children.
- (7) Fifty percent of them considered late marriage as one of the methods of controlling the size of the family.
- (8) Eighty percent of them thought that over population leads to socio-economic instability in the country.
- (9) Regarding the methodology of imparting population education at the collegiate level, 40 percent favoured seminars and 26 percent favoured lectures and 30 percent favoured the integration of population education with collegiate curriculum.

6. In 1976, S.L. Ammal of Avinash Lingam Home Science College for Women, Coimbatore studied the adolescent awareness of population crises and their opinion towards introducing population education in schools. The sample consisted of 400 adolescents selected from classes X and XII both boys and girls from both urban and rural schools and the techniques used was a Questionnaire. His findings are:-

(1) The urban adolescents from the middle income group were more aware of the population crisis prevailing in our country than the rural sample of the middle income group. The rural sample of the low income group was least aware of population crisis.

(2) The most frequently mentioned causes of population crisis were customs and traditions, early marriages, failure of family planning programmes and religion. The responses were better in the case of urban adolescents of middle income group and boys from large families.

(3) Majority of the adolescents from middle income groups and boys from large families mentioned unemployment, poverty, poor housing conditions and food shortage to be very serious hazards of over population.

(4) The adolescents had very poor awareness of the measures taken by national and international agencies to combat population crisis.

(5) In general, the adolescents got poor scores for the questions asked on selected aspects of population issues. The urban adolescents of the middle income family and the boys from the large families had scored better than the others. The main sources of population information for the adolescents were novels and story books, movies, textbooks and magazines.

(6) Most of the adolescents viewed the term "Population Education" as education to control population explosion. Majority of them preferred population education in schools and they felt that the causes and effects of population crisis, measures taken to combat population growth and importance of small families should be taught to them at high school level.

(7) Majority of the adolescents felt that both the boys and girls should receive population education in schools, and it should be taught as part of a subject Preferably alongwith science subjects.

7. In 1979, D.Manohar Deshmukh of Teachers' Training College, Bangalore studied population problem awareness among the Pre-University students of selected Colleges of Bangalore. The main objectives was to study the population awareness among the second year Pre-University Course students specially socio-economic conditions and problems related to food, health, housing, education and development. 160 students from 6 different Colleges were involved in this study out of which 56% were boys and 44% were girls. The multiple choice questions with 40 items was used to collect the data. The findings are:-

(1) The general awareness of students towards population problem was found to be moderate i.e. 55% were aware of population problem.

(2) Boys were found to be much more aware of the population problem than girls.

(3) Family background and religion were not related to students' awareness of population problem.

(4) The students involvement in the social service activities in the reading of newspaper or going to movies had no effect on their population awareness. On the other hand reading general books and listening to radio talks had significant bearing on the level of population awareness.

8. S.B. Khare of the Regional College of Education, Bhopal in 1981 made study of the population awareness among the 250 students of Class VIII studying in schools of Bhopal City. He used a Questionnaire having questions on population and environment, economic development, health and nutrition and social relationship. His findings were:-

(1) students' awareness of population problems was moderate.

(2) 60% of the students were well-aware of the relationship between population and environment, population and economic development, population and health and nutrition and population and social problems.

9. Dr. Chaiwat Panjaphongse of Mahidol University, Thailand in 1974 made a study of the knowledge, attitudes and beliefs of secondary school students about population education and family planning. He administered his questionnaire to 2038 students from vocational and Academic secondary schools in Thailand. His findings are:-

(1) Majority of the students believe that Thailand was facing serious population problem.

(2) These students favoured small family norms for themselves and for others.

(3) The students generally were of the opinion that population education be introduced in the schools and family planning methods be encouraged.

(4) Female students were more anti-nationalistic than the male students.

(5) Academic students were found to be more anti-nationalistic than the vocational students.

The objectives and findings of this study were:-

The major purpose of this study was to identify the attitudes of an elite group of young people - i.e. students outside of Bangkok who were in their final year of secondary school - concerning the Thai population situation, family size and marriage norms, family planning, family planning education, and their potential decisions on their own marriage age and number of children. The associations among some of these variables were also investigated.

The results show that most of the students felt that Thailand has a serious population problem. Female students had a generally more antinationalist attitudes than vocational students.

Despite their elite nature, respondents tended to come from fairly large families (median = 6.4 children). There was general satisfaction with the size of this 'family of orientation', even among students with 5 or 6 siblings. Although there was clearly an association between the number of one's siblings and desired number of children

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there nevertheless was a very important distinction between the two; the median desired number of children was 2.4, or 4.0 children smaller than the family of orientation. Somehow, through a process as yet unknown, these young people have already undergone a major transformation in what they consider to be the most desirable family size.

If one were to assume that a) respondents stated desired number of children will in fact later be translated into actual behaviour, and b) the purpose of population education is only to influence students to have small families, then one might conclude that population education for this group of students is not necessary. However, we would question the first assumption and strongly oppose the second. Nevertheless, these findings at least suggest that upper secondary students should be a somewhat lower priority target for population education activities than younger students and out-of-school youth.

Respondents tended to favour very high marriage ages, both for other Thai (28 for males, 24 for females) and for themselves (28 and 26 respectively). These figures are considerably higher than actual Thai marriage ages. However, any conclusions concerning a possible relationship between fertility and marriage age should be viewed with caution, since it is known that Thai women tend to marry at a relatively older age but compensate by experiencing much higher fertility over age 30 than to women in other countries. It is also true that marriage age has tended to fall in some societies where use of contraception is common.

Nine out of ten students both the use of family planning and the introduction of education about family planning into school programmes. Even the inclusion of such conceivably-controversial topics as human sexual development, the human reproductive system and human conception in the content of school curriculum was favoured by a large majority of respondents. Further investigation is needed however, to ascertain the most appropriate level and methods for each content area.

Even though most of them favoured family planning, one student in three still viewed Thai tradition and / or Buddhism as a potential barrier to its adoption. Educational programmes should, therefore, concentrate on the relationship between these two areas and family planning.

10. In 1980 Dr. Abu Hameed Latif of Population Education programme, Ministry of Education, Bangla Desh made a study of the knowledge in and attitude towards the population problems, issues and population education of different level of students in Bangla Desh. His sample consisted of 1,196 students of classes IV to XIV belonging to primary schools, higher secondary schools and colleges of 19 Thanas of Bangla Desh. He used a test of knowledge about population facts and related problems and also a test of attitudes towards population problems, issues and population education. The attitude test was based on Linkered techniques and his findings are:-

The tests of knowledge used for an assessment of the knowledge base of the students of different levels of education discriminated them within class, between classes and between the sexes in each class; indicating thereby intra-class and inter-group variations due possibility to variations in the knowledge base. It is also found that the students of higher classes had a higher knowledge base than those of the lower classes. This is indicative, to an extent, of the content validity of the set of tests of knowledge used for the study. Hence conclusion may be drawn to the effect that the set of test possessed some amount of content validity.

Assuming the mean for the distribution of knowledge tests scores for each class or group to be indicative of a fair amount of knowledge in the area of population problems, issues and population education, it may further be concluded that within each class or group there is still a substantial number of students whose levels of awareness should be raised substantially through an introduction of relevant population education course suitable for each class.

The mean of the distribution of attitude tests scores of each class or group indicated a fairly favourable attitude of the students towards population education. However, the nature of the distribution of test scores for each class or group indicated intra-class or inter group variations, demonstrating the fact that in each group there were large number of students with less favourable attitude than that is represented by the mean scores for the class. It is also found that the class or the group with a higher knowledge base tends to be more favourable towards the object than that with a lower knowledge base. This leads naturally to the conclusion that the attitude of a student is capable of being changed towards the more favourable attitude of the students. There is however, an interesting exception in the case of the students of the initial class of the secondary level (class six). In this class although the male students had higher knowledge base than the female students, their attitude was very slightly less favourable than that of the female students. There might be some socio-psychological reason for this and these reasons need to be explored in future studies. This does not however, invalidate the general conclusion that a higher knowledge base leads to a more favourable attitude.

The sex difference of knowledge base of the higher level of education (classes XI to XIV) is indicative of a higher knowledge base of the male students. But in each class in this level the female students tend to have a slightly more favourable attitude towards the object. This occurred possibly because of the fact that certain socio-psychological factors connected with population dynamics play a more direct role in the personal lives of these mature female students as a group. The validity of this assumption needs to be tested through deeper study and analysis.

Besides the above studies on knowledge and attitudes about population education among the students at various levels, we have some explicit studies on methodology of teaching population related studies which need due consideration.

11. In 1971, C.T.Fameuff conducted a research titled " Action Research for the Development of a Pilot Model for Teaching Population Dynamics in the Karnataka State ". It was conducted under the cooperation of Path Finder Fund and the University of North Carolina at Chapel Hill, U S.A. The main objectives were to determine the feasibility of teaching population dynamics and to develop an educational model for teaching population education in India. Formal and informal instructional format were experimented and compared. The sample consisted of 1400 IX class students both boys and girls from six urban and 6 rural schools based on purposive sampling. 4 Groups were taught by the formal method, 4 by informal method and the remaining 4 formed the control group, The Curriculum contents consisted of :-

- (1) Birth rate, death rate and population growth.
- (2) Health & population
- (3) Food production and population
- (4) Family size and population
- (5) Standard of living and population.

The content was taught through formal and informal methods in 12 schools of Mysore (6 urban and 6 rural). The formal method of teaching was through lesson plan approach and informal teaching included problem situation initiating discussion, presentation, A.V. material, role play, field trips, debates and symposia. Achievement test were administered before and after the experiment to all the 3 groups, formal, informal and control.

Findings were:-

(1) The formal and informal methods of introduction were equally effective in producing a significant information gain in the area of population dynamics.

(2) Population dynamics information can be taught to Ninth standard children in Mysore and the level of knowledge gain is statistically significant.

(3) There was no difference in the information gained about population dynamics between boys and girls.

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(4) Rural children in Karnataka State are more receptive to population dynamics information than the urban children.

(5) The model developed for teaching population dynamics is viable and could be used with other Ninth standard students in India.

(6) Children with specified limits of time can learn an appreciable amount of knowledge concerning their life situation and global population problems.

12. R.A. Robinson of M.S. University of Baroda in 1975 conducted a study on the effect of teaching population education on the awareness of students of Standard VII of Central School, Baroda. A purposive sample of 27 students was taught 5 lessons in 5 selected areas of population education through Teacher Led Approach with the use of teaching aids. The units taught included:-

- (a) Population Growth
- (b) Population Growth & Social Problems.
- (c) Population Growth and Standard of Living.
- (d) Population Growth, Food and Nutrition.
- (e) Population Growth, Hygiene and Communicable diseases.

A short answer objective type test served as a pre-test and the same test was again administered after experimental teaching as a post-test. The findings were:-

(1) There was significant difference between the achievement of the students as tested by the pre-test and post-test for the first two areas. Thus the teaching of population education did increase the total awareness of the students regarding population problems in these areas.

(2) The achievement was not significant for the other three areas.

(3) Whereas 81.4 percent of the students were found interested in learning about population problems, 66 percent of the students did not want to learn about sex and family planning.

(4) The teachers were of the opinion that the five learn lessons developed on population education can be easily understood by the students of standard VII.

(5) The sex, family size and parental education did not have any effect on the students achievement in population education.

13. S. Parmeshwar Appa of Teacher Training College, Dharwar in Karnataka in 1975 did an experimental study to compare the effectiveness of listic method with the integrated method of teaching population education in secondary schools. The objective mainly was to experimentally determine the effectiveness of teaching population education as a subject and population education as an integrated part. Three groups of students 30 each from Class IX were matched in respective scholastic achievement, intelligence and socio-economic studies. Number-1 experiment was taught wholistic method. No.2 experimental group was taught through integrated approach and the No.3 group was used as a control group. A knowledge questionnaire was developed to serve as achievement measuring devised in pre and post-tests. The units covered in each method consisted of :-

- (a) Problem of population growth
- (b) Courses of population growth
- (c) Effect of over-population
- (d) Remedies of Population problems.

His findings are :-

(a) Both the integrated and holistic methods have shown significant information gain.

(b) The control group has not shown any significant information gain.

(c) Integrated method has shown significant information gain over control group.

(d) holistic method has shown significant information gain over control group.

(e) Integrated method has shown significant information gain over control group.

Thus both the experimental groups have shown significant information gain whereas the control group has not shown any significant information gain. This proves that both the teaching methods are effective even though the degree of effectiveness varies.

The thesis upholds the superiority of integrated method over the holistic method in teaching population education at secondary schools.

From over-all study of the previous studies in the area of knowledge of population education and attitudes towards population problem has been studied in its own entirety and as regards methods stray studies have been made based on formal and informal or wholistic and integrated approaches.

The present study is unique from all the previous studies as this study aims at finding out which method out of the 4 methods experimented viz; Teacher Led Approach, Self-Learning, Peer Group Approach and Mass Media **Approach** , Self-Learning, Peer Group Approach and Mass Media Approach, is the best to generate knowledge and to develop positive attitudes towards population restriction and also to generate strong beliefs with regard to teaching small family norms. Such a study has not been made previously, hence, it is quite significant and would lay down new norms in teaching-learning of population education and in developing positive attitudes, and beliefs in population control.

Chapter - THIRD

Developing Teaching Units , - PP 54 - 75
Instructional Material ,
and Knowledge, Attitudes and
Beliefs Tests.

Developing Teaching Units and Instructional Material

There was no textbook or the textual material available for teaching Population Education to Class IX and X students in the Schools of Madhya Pradesh. The Schools selected for this experiment were in the urban and rural areas where Hindi has been the medium of instruction. We do not find instructional material in Hindi on Population Education suited for these classes. Hence, we had to develop our own textual material. For this purpose we examined the text material already in circulation and also the suggested curricula for Secondary Schools.

The earliest material that we came across was titled 'Population Explosion' - Textbook on Population Education for Secondary Schools by Dr. R. K. Bhan and published by The Pathfinder Fund, New Delhi in 1973. This was found to be very good Textbook on Population Education and was very well written. The book was divided into 7 Chapters. The detailed contents of the books are:-

1. A Small Crowded World - Very uneven distribution of population - What makes certain parts very densely populated ? - What makes certain parts very thinly populated ? - The ratio between land and people - Pressure on cultivated land - Urban concentration of population - Unfair distribution of population - How fast are we growing in numbers ? - The shrinking world - What is in store for us.
2. How many Heads and Hands are We ? - Uneven distribution of population - the land and people ratio in some states - The growing proportion of city dwellers - Our fast growing population - Counting Heads - Dynamic nature of population - Balancing birth rate with death rate - Males outnumber females - Predominance of younger people.
3. Why this Population Explosion - As accelerated growth rate of population - Dynamic nature of population - What kept the population growth rate very low ? - Modern science succeeds in increasing life span - Growth rates in developed and under-developed countries - Population explosions in India.

4. Leading a better life - A common goal for the entire humanity -
Some indexes of better living - Health is Wealth - Better medical care for greater longevity - More nutritious and balanced diet - Good longevity and low death rate go together. - Literacy and better living - Employing mechanical slaves for higher production - Higher incomes for better living - Productive versus dependant population - The higher the standard of living the lower is the birth rate - A high standard of living leads to a still higher one - Conclusion.
5. Running on the spot - Growing investment in industry - Increasing production in agriculture - Higher consumption of energy - More education - The gains being eaten up by growing population - More illiterates than ever before - Low availability inspite of successes on food front - More and more expenditure and less and less savings - The cost of bringing up the new-borns - Accepting a challenge.
6. Growing Population and Depleting Resources - Better living calls for higher levels of consumption - Soil is our prime resource - Extinction of wild life - Water : Elixir of life - Minerals the backbone of modern civilization.
7. Maintaining Balance - Living in harmony with nature - Food for all - Unfavourable ratio between resources and man - Family size and population growth - Planning a family as a way of life - A small family is a happy family - A healthy mother is a great asset for a happy family.

As this material was prepared sometime between 1970 and 1973 and since then lot of thinking has gone into the curriculum of Population Education. It was not thought feasible to adapt this Textbook as such for our experiment. However, some guidance and help for developing our own material could be taken from this book.

As regards the suggestions regarding syllabi of Population Education for Secondary Schools we came across a Working Paper presented by Dr.T.S.Mehta of NCERT at Regional Workshop on Population and Family Education held at Bangkok in September-October, 1970. Here Dr.Mehta has suggested five areas :-

Area I - Population Growth :

1. Population grows due to the gap between birth rate and death rate.
2. Incidence of epidemics, famine, wars etc., raised death rate and slow birth rate.
3. Death rate, application of new knowledge in medicine and public health.
4. Nutritional status, personal and environmental hygiene, traditional beliefs and economic growth (income level) effect birth and death rates.
5. All these factors help in bringing about demographic transition.
6. Family size plays a vital role in regulating population growth.

Area II- Economic Development and Population :

1. Increase in production is nullified by rapid increase in population.
2. Rapid growth of population adversely affects the economic life of a country.
3. The growth of population has close relationship with the standard of living of people.
4. Low standard of living leads to low production resulting in lower standard of living.
5. Standard of living is raised by increased production and population control.
6. Production and population are both controllable by man and his knowhow.
7. The effective way to check the growth of population and raising the standard of living depend on people and how they assume responsibility to meet the challenge.

Area III -Social Development and Population Growth

1. Illiteracy is detrimental to country's progress and democratic living.
2. Lack of proper training facilities often results in poor efficiency of man power.
3. Goods and services are rendered inadequate by rapid growth of population, it ultimately lead to evil social practices.

4. Concentration and over-crowding in cities and its effects lead to pollution of air, water, land and environment.
5. Frustration caused by unemployment generate social tensions and evil social practices.
6. Social pressures on large families often result in indebtedness, litigation - lower standard of living.
7. Equal status and individual freedom of women can help check population growth.
8. Gainful employment of women has an impact on standard of living and helps in tackling population problem.

Area IV - Health and Nutrition Education :

Positive health and disease. Health facilities do not become inadequate with rapid growth of population. Small families promote better standard of living. Mal-nutrition and under-nutrition lead to bad health and disease. Size of family determines the nutritional states of the family.

Area V - Family Life and Biological Factors and Population Growth:

This was suggested to be covered in Biological Science Course.

This was the first exercise in suggesting School Curricula in the area of Population Education.

In September 1971, the Population Education Cell of the NCERT published a Draft Syllabus on Population Education. In this they described the meaning and definition of Population Education as well as specified the objectives of teaching Population Education. In this document, the NCERT has specified the objectives for Secondary School level as under:-

For a majority of pupils this stage is the last opportunity for education unless they decide to go for university. Consequently the purposes of teaching population education (what is taught and how it is taught) have to be planned in terms of the social values, attitudes and skills required for intelligent participation in the activities of the society. It would, therefore, be worthwhile to understand the growth characteristics of the pupils at this age level. Some significant ones are:

Students at this stage are well along in the period of adolescence (at the threshold of adulthood) when physical, emotional and intellectual changes are rapid. Their interests also expanded. Students now demonstrate an increasing desire for independent families and those around them. Their minds are more and more inquisitive, questioning and doubting orthodox ways and wisdom. They look for rapid changes and quick decisions. Emotionally they are capable of extreme dedication and loyalties to individuals and causes. They like to develop insights into problems around them and are anxious for recognition as individuals and eager to find a role to play in the family, and in local affairs. These characteristics (they vary from student to student) present educational challenges and opportunities. These characteristics can be fully utilized to produce a person who is self-disciplined, active, constructively critical of mind, intelligently participating in public affairs, dedicated to the improvement of the society and anxious to learn more and more of importance to himself and to his country. In the light of the above the objectives of teaching population education at this level are:-

Knowledge and Understandings :

- (1) to develop an understanding of the components of population growth (more complex concepts about birth rate, growth rate, death rate, migration etc).
- (2) to develop an understanding of the trends of the population growth at national and international levels.
- (3) to develop an understanding of the economic development plans of the country-trends in national income, gross national product and share of individual in the same.
- (4) to develop an understanding of the per capita income and standard of living.
- (5) to develop an understanding of the relationship between the family size and standard of living.
- (6) to develop an understanding of the relationship between population growth and economic development and social welfare.
- (7) to develop an understanding of the problems arising out of rapid population growth e.g. social tensions, crimes, anti-social activities and peace and security.

- (8) to develop an understanding of the reproductive process in animals and human beings with a view to creating an awareness that family size is controllable.
- (9) to develop an understanding of the factors responsible for a small family.
- (10) to develop an understanding for the need for balance in nature and the effect of rapid growth in population in disturbing the balance (man can live only in harmony with nature and not by destroying it).
- (11) to develop an understanding of the problems of health and population growth- both at national and international levels (this will also include nutrition, balanced diet, food shortage).
- (12) to develop understanding of the manifold importance of accurate and comprehensive statistical data on population for planning and development.
- (13) to develop an understanding of the population policies and programmes of the country.
- (14) to develop an understanding of the roles of international organisations like UNESCO, UNICEF, WHO and others in solving the problems arising out of rapid population growth.

Skills, Abilities and Attitudes:

- (15) to develop the ability to use the tools of social sciences e.g. charts, maps, graphs, and statistical data (read, interpret and prepare them).
- (16) to give students practice in simple demographic analysis (use census, health department or other data to calculate birth rate and death rate.)
- (17) to develop the ability of participating intelligently in the processes of decision making (with regard to population programmes at various levels).
- (18) to develop the ability to assume local leadership role in executing population policies and programmes.

- (17) to develop the ability of participating intelligently in the processes of decision making (with regard to population programmes at various levels).
- (18) to develop the ability to assume local leadership role in executing population policies and programmes.
- (19) to develop a positive attitude towards a small family norm arising out of appreciation that a small family is better able to care for its members including their ethical and moral development.
- (20) to develop an appreciation of the urgency of taking certain measures for keeping control over the growth of population.
- (21) to develop respect for problem solving methods of dealing with persistent ills of society (rather than waiting for heavenly help).
- (22) to develop a realization of the effectiveness of using scientific methods to human problem for speedy solution.
- (23) to develop an appreciation that superstitious beliefs are detrimental to social progress and social well-being.
- (24) to develop an appreciation of the need for cooperative efforts for bringing about needed change.
- (25) to develop willingness to accept responsibility for the improvement of family, community and national life.

The syllabus suggested in this document for the secondary stage children was as given below:-

Major Ideas :

- (i) There is a close inter-action of population growth and developmental process - with particular reference to developmental programmes for raising standard of living of people.
- (ii) There is a close relation between population size and the quality of life.
- (iii) Family size is a matter of deliberate choice and human regulation rather than of accident or forces beyond human control.

Area I - Population Growth :

1. Population grows due to the gap between birth rate and death rate.
2. Several pronatality factors particularly traditional and cultural effect on birth rate.
3. Improved health measures and hygiene and new knowledge in medicine have decreased death rate.
4. Demographic transition is a discernible phenomenon based on known factors.
5. Family size plays a vital role in regulating population growth.

Area II - Economic Development and Population :

1. Increase in production is nullified by rapid increase in population.
2. Rapid growth of population adversely affects the economic life of a country.
3. The standard of living depends on the relationship between growth of population and growth of production in a country.
4. Low standard of living leads to low production resulting in lower standard of living.
5. Standard of living is raised by increased production and population control.
6. Production and population both are controllable by man and his know-how.
7. The effective way to check growth of population and raising the standard of living depend upon people and how they assume responsibility to meet the challenge.

Area III - Social Development and Population Growth :

1. Illiteracy is detrimental to country's progress and democratic life.
2. Lack of proper training facilities often results in poor efficiency of manpower.
3. Goods and services are rendered inadequate by rapid growth of population which leads to evil social practices.
4. Social pressures on large families often result in indebtedness, litigation.
5. Concentration and over-crowding in cities leads to bad effect such as pollution of air, water, land and environment.

Area IV - Health, Nutrition and Population Growth :

1. Health facilities have been improved during the past few decades but these are not in proportion to the rapidly growing population.
2. Improvement of public health facilities necessary for betterment of society.
3. Small families in comparison to large families help in promoting better standard of health.
4. Malnutrition and under-nutrition and major problems that challenge the survival of population in India and many other countries.

Area V - Biological Factors, Family Life and Population :

1. The biology of human population is dependent upon evolution, reproduction and the future of man.
 - a) Human evolution has been accompanied by various achievements of man.
 - b) Reproduction in man has certain characteristic features not observed in other animals.
 - c) The future of man shows several trends of which most important is over-population.
2. The institution of marriage and the family is important and significant units of the society and of the nation.
3. A small family size can contribute to better inter-personal relationship between family members.
4. Measures restricting family size help in providing for maximum well-being of every citizens.

For our experiment which was of a short duration and which would hardly have allowed time to complete this whole syllabus did not allow us to adapt it for our purpose. We thought of simplifying it and taking some basic concepts and issues which are related to the life and environment of the children studying at class IX and X level in the Schools where the experiment was being launched.

Then we went in length to examine the Teaching Units on Population Education brought out by the NCERT in December, 1973, Those Units were very well developed and had a considerable material for our purpose. In this Book, we came across 11 Units:-

- I. Production and Population Growth
- II. Population Growth and Socio-Economic Problems.
- III. Population Growth and Economic Development
- IV. Population Growth and Standard of Living.
- V. Our Food Problem.
- VI. Population Growth and Citizenship.
- VII. Marriage Age Vs. Population Growth.
- VIII. Population Growth Vis-a-Vis Social Problems.
- IX. Malnutrition and Undernutrition.
- X. Hygiene for you and y-your community.
- XI. Communicable Diseases.

Out of all these Units, we thought of making use of Unit No. II, III, IV, V and VIII, and we also thought of up-dating the population figures and the data for our purpose for creating an awareness about the population increase.

IN 1978, NCERT published a Book titled " Population Education in Classrooms " which also had some basic concepts and some Units which were of great importance and which we decided to make use of in developing our own textual material for the students and the teachers. This Book contains the following Units :-

1. Basic Demographic Concepts.
2. Population and Nutrition
3. Population and Quality of Life.
4. Population Growth and Productivity.
5. Population and Land Use in India.
6. Population Growth in Time Perspective.
7. The Changing Family.
8. Characteristics of Modern Man.
9. Man in the Making.
10. The Future of Man.

From this Book we made use of Unit I - regarding Basic Demographic Concepts, Unit.3 - Population and Quality of Life, Unit.6, Population Growth in Time Perspective, Unit.9 - Man in the Making and Unit 10 - Future of Man.

The material on Population Education published by UNESCO Regional Office at Bangkok was also very minutely examined and selections were made from many of their publications for use in our textbook on Population Education which intended to use in this Project as a Basic Curriculum Guide. The Textbook was developed with active help from Mrs. Jyoti Sohoni (upto May, 1982) and Shri K.M. Bhandarkar (from August 1982 onwards), both Junior Research Fellows, working on this Project. The textual material thus gathered was named "Jansankhya Shiksha Didarshan" and sub-titled in English as "Guide to Population Education". This Textbook ran into 46 pages of textual material containing the following:-

1. Population Education -

What is Population Education; Its need in India and its Importance. This was mostly addressed to Teachers then we had Chapters.

Chapter I : World Population - Introduction and History : Introduction to Population; What is Population; Historical Perspective; Increase of World Population; Distribution and Density of Population; What is Population Density; Birth Rate; Death Rate and Immigration; Population Density; Developed Nations and Developing Nations; Population Figures and Vital Statistics of some Countries of the World.

Chapter II : Population Theories : Population Theory of Malthus; Proposition of Malthus; Checking the Population Growth; Theory of Optimum Population; Living Standard; Birth Rate and Death Rate.

Chapter III : Expected Results of Population Explosion :

Thinking of Margaret Alwart Line ; Three Presumptions for the Future; Decrease in Population; Gradual Achievement; Zero Population Growth and Reformative Ideology of Ireland.

Chapter IV : Nutrition & Psychology Versus Population :

Importance of Food; Main Functions of Food;
Nutritive Value of Food; Population and Nutrition;
Mal-Nutrition; Energy.

Chapter V : Environment & Pollution :

Scope of Environment; Pollution, its meaning and Types;
Air Pollution; Water Pollution; Radio-Activity, Noise.

Chapter VI: Population & Standard of Living :

Standard of Living, Its Meaning and Salient
Characteristics; What Makes the Standard of Living; Food,
Education, Health, Clothes & Housing. Different Elements which
affect Standard of Living.

Chapter VII: Food Problem:

Food & Population; Productivity; Causes of Imbalances;
Defective Distribution System; Wastage of Foodgrains; Traditional
Food Habits.

Chapter VIII: Population of India :

Introduction; Population Increase from 1900 to 1951;
Rapid Increase from 1951 to 1981; Population Density and
India.

Chapter IX : Different Aspects of Indian Population; Future Development
of India and Effect of Population Growth; Scarcity of Foodgrains;
Population Growth & Planning ; Low-Income; Unemployment; Housing
Problem and Problem of Providing Education; Shortage of Health
Services; Low-Standard of Living; Exercise of Human Values;
Transportation and Accidents; Recreation; Density of Population.

Chapter X : Population Growth of Madhya Pradesh : Its comparison with other States; Literacy Percentage; 10 Highly Populated Districts; Some Interesting Figures; Problems in Densely Populated Areas of Madhya Pradesh; Housing; Drinking Water; Means of Conveyance; Adulteration; Price Rise; Educational Facilities; Unemployment; Rush of Population to Cities; Causes of Dense Population; Industrialization and Population Increase; Food Problem;

All this has been briefly but candidly treated in this Booklet. This Booklet was the basic textbook for the students and served as reading material. For teachers it served as a Guide Book on Population Education and they made use of this book in teaching Population Education in their class rooms.

Contd. -

DEVELOPMENT OF TEACHING MATERIAL

After developing the Teaching Units and the textual material it was decided to develop Unit Plans and Lesson Plans for the teachers so that a uniform pattern of teaching is adopted by the teachers in the teacher led approach. For self-Instructional approach based on the textual material, Self-Instructional material was developed. For Peer Group Approach a handbook giving details of issues to be discussed and questions to be raised and tackled was prepared. The Peer Group scribe was to record minutes on the given sheets after each discussion. For Mass Media approach a selection was made from the films available with the Family Planning Association of India and the tape-slide programme, developed by Population Education Unit and Department of Teaching Aids of NCERT, New Delhi. Besides these posters and atlas sheets developed by State Institute of Education, Bhopal were used. Thus material for the four teaching approaches was developed and gathered for use in the classrooms for teaching Population Education.

The detailed discussion about the material developed for teaching approaches will make things more clear as regards the considerations we had in mind.

Teacher Led Approach

IN this approach the teacher was required to teach the prescribed units of Population Education to the students of IX and X classes in their respective schools. To make teaching uniform, in all the selected schools as best as it could be, the Unit Plans followed by Lesson Plans were developed. The objectives of Unit Plans and Lesson Plans were specifically developed keeping in mind the expected outcomes of teaching population education. Plans developed per unit are as follows:-

<u>Unit</u>	<u>Lesson Plans</u>
1. World Population Introduction and History	1. World Population - Increase, Density and Distribution 2. Birth rate, Death rate and Migration.

Unit Test consisting of 6 objective type multiple choice items.

Unit 2 : Principles of Population - 1. Lesson Plan Malthus' Principle of Population

2. Principle of Optimum Population

Unit Test consisting of six multiple choice items.

Unit 3 : Expected Results of Population - Expected Results of Population Explosion
Explosion.

Unit Test consisting of 5 M.C. Questions

Unit 4 : Population : Nutrition - 1. Balanced Diet
and Energy
2. Nutrition, Malnutrition and Energy.

Unit Test - Six Questions

Unit 5 : Environment and Pollution - 1. Population and Environment
2. Kinds of Pollution

Unit Test - 5 Questions

Unit 6 : Population and Standard - 1. Standard of Living.
of Living.
2. Sources of Standard of Living

Unit Test - 5 Questions

Unit 7 : Food Problem - 1. Food Problem
Unit Test - 5 Questions

Unit 8 : Population of India - 1. Population of India
Unit Test - 5 Questions

Unit 9 : Effects of Population - 1. Effects of Population increase
increase in India. in India.

Unit 10 : Population of Madhya - 1. Population of Madhya Pradesh.
Pradesh.
Unit Test - 5 Questions.

In this way all the Units were covered in 15 lessons in 15 periods of 45 minutes each. The actual class teaching was done in 15 working days. The maximum time limit given was one month and all schools had to start teaching together and complete 15 lessons in a month's time. After completion of each unit a Unit Test consisting of 5 to 6 multiple choice items was administered to the class. The checking was done by the teacher and the answer sheets with scores were passed on to the students.

Self Instructional Approach :

For Self-Instructional Approach the Teaching Units were the same as in Teacher Led Approach but the strategy adopted was of self-learning. The concept or an issue was described in brief but in explicit manner and drive home the idea in the minds of the students below it were given some questions. These questions had direct bearing on the subject matter discussed above. These questions were answered by the students and then compared with the exact answers given at the lower end.

The self-instructional material was divided into 42 frames or sheets as follows:-

		<u>Self-Instructional Programmes</u>	
Unit 1	World Population	-	1. Instruction to Population
			2. World Census
			3. Population Density
			4. Population Distribution
			5. Birth rates/Death Rates.
			6. Migration
Unit 2	Principles of Population	-	7. Population and Malthus
			8. Malthus' Principle of Population
			9. Population Checks
			10. Principles of Optimum Population.
			11. Population Growth in India.
			12. Population Growth between 1921-1951
			13. Population Density in India.
Unit 4	Different Effects of Population in India.		14. Effects of Growth and Decrease in Population
			15. Effects of Growth and Decrease in Population
			16. Population Explosion and Plans.
			17. Employment
			18. Education
			19. Low Standard of Living
			20. Decay in Morality
			21. Recreation

Unit
5

Population and Standard of Living -

22. Census of Population increase.
23. Resources and Population
- 24.A. Decreasing, Indian Standard of Life.
- 24.B. Elements of Standard of Life.
25. Census of Low Standard of Life.
26. Sources of Standard of Living - Food and Nutrition
27. Education
28. Health
29. Clothing

Unit
6

Food Problem

- 30(A) Population and Food
- 30(B) Production
31. Imbalance in Food Production and Population.
32. Defective distribution of Food Supplies.
33. Wastage of Food

Unit
7

Population Education,
Nutrition and Energy.

- 34(A) Nutrition
- 34(B) Importance of Diet
35. Constituent of Food
36. Nutrients in a Diet
37. Carbohydrates, Salt, Iron and Iodine
38. Vitamins, Balanced Diet
39. Nutrition
40. Population and Nutrition
41. Mal-Nutrition
42. Energy.

Peer Group Discussion Approach

The strategy adopted for the Peer Group Approach was that the teacher should assign a unit from the Instructional Book titled 'Guide to Population Education' to the Group of students involved in this approach. The Group read and prepared it and next day the Group of Peers got together in the class and elected a Chairman and a Secretary. The Secretary kept the track of the discussion and prepared the minutes. To help and guide the discussion salient features of all the units were developed in questions so that group made efforts to find relevant answers to those.

The role of the teacher in this approach was that of a facilitator and moderator. He was not to interfere but to guide the deliberations on the right lines so that a fruitful discussion could take place. Issues raised and settled were to be noted down by the participants as well as by the secretary of the Group and was signed by the Chairman in the next meeting after reading it to the Group.

The units were the same as in Self-Instructional Approach and the monograph titled "Guide to Population Education" was the basis of this approach as well.

M

Mass Media Approach

Mass Media Approach was very difficult to manage uniformly all through the experiment. However effort was made to impart similar amount of knowledge to the students undergoing this approach by films, tape-slide programme of NCERT, Posters, Pictures, Newspaper cuttings and the monograph on Population Education.

The role of the teacher in this approach was to manage to show films and tape slide programmes and to display posters and pictures. He guided the students in preparing displays from Newspaper cuttings. He was to see that students attended the shows and the programmes. He also arranged talks on various aspects of Population explosion.

The films chosen for this approach were ' Down to Earth', and other films which were borrowed from the Family Planning Association of India, Dhopal Branch.

The teacher distributed the monograph entitled 'Guide to Population Education ' to all the participating students for ensuring that all had access to basic knowledge of facts about Population.

Constructing Knowledge, Attitudes and Beliefs Tests

After the finalisation of the Instructional Material for this project, the next stage was to devise, develop and construct tools for pre-testing and post-testing for measuring achievement in regard to gain in knowledge of Population Education by four different approaches so that it could be possible to compare the viability of these approaches in regard to knowledge. Similarly, a test to measure the positive changes in attitudes of the students was also devised so as to ascertain positive effect of the four approaches of teaching an attitudes of the students.

The beliefs are so engrained that they affect the day to day behaviour and have an impact on the decisions taken by the individuals in their life.

Beliefs about Population Education can be positive as well as negative. A test to ascertain these aspects of beliefs was developed. It was used in pre-test. After educating the students through four different approaches this belief test was again administered to assess the changes wrought in the beliefs. This helped in assessing the comparable usefulness of different approaches in creating an impact on beliefs.

The Knowledge Test

A knowledge test based on the general awareness of Population facts and on the Population Education instructional material used in the study, was developed. It consisted 80 objective type questions of multiple choice items. This test was tried out in rural and urban setting with 50 students each. On scoring of items and after discussing the test with Population Education experts some items were re-worded, some were added and some were weeded out. Finally we included 40 items in this test which covered wide range of Population Education Knowledge.

The test as administered in Pre and Post-testing is given in the appendix.

The test was originally prepared in Hindi, however, its English translation is given in the appendix alongwith the Hindi Version.

Attitude Scale

In this study effects of Approaches of teaching Population Education on attitudes was also to be studied hence Attitude Test was developed based on linkert scale of five points from strongly agree to strongly disagree. The test which consisted of 60 items was tried out in rural and urban setting and after scoring anomalies were removed and test having 50 items was finalised. It was prepared originally in Hindi. However, its English Version is given in the appendix alongwith its original Hindi Version.

The Beliefs Test

To ascertain impact of different approaches of teaching Population Education on the beliefs of the students a Beliefs test was devised based on yes and no responses. This test had 55 items. After try out in urban and rural setting and after its scoring some anomalies and doubtful statements were removed. The remaining items were discussed with experts and after some changes and eliminations 40 items were finalised which formed the Beliefs Test and it was administered to collect pre-test data and post test data in this study.

The original test was in Hindi. Its English Version alongwith the original test is given in the appendix.

Expert Opinion

After finalising all the three tests these were submitted to Prof. B.S. Parekh, Head, Population Education Cell of the National Council of Educational Research and Training, New Delhi. He subjected these tests to critical examination of the Population Education and Test Exports. Later he informed that the tests were okayed by the Exports and we were allowed to go ahead for using it during the course of our study.

Data Collected and Analysed

The pre-test and post test scores were tabulated in all the individual cases as per approaches of teaching. The scores were then statistically treated and the conclusions were arrived at as given in the following chapter.

General Opinion About the Tests

General opinion of the teachers and the students with whom this test was actually used was that tests were, matter of fact, evaluated gain in knowledge, measured amount of changes affected in attitudes and beliefs of the students subjected to this experiment of four approaches of teaching viz; Teacher led, Self-Instructional, Peer Group and the Mass Media Approaches. It was easy to administer, mark the responses and to score.

Chapter - FOUR

Data Analysis and Hypotheses Testing PP 76-116

DATA ANALYSES AND HYPOTHESES TESTING

The data of pre-test and post-tests alongwith the individual data of the students showing their habitat (urban /rural), their sex, mother's and father's education, number of brothers and sisters was collected from all the Schools where the experiment was carried out. It was processed, tabulated and statistically analysed.

On the basis of analyses of variance and other statistical tests the hypotheses were tested separately with regard to Knowledge, Attitudes and Beliefs. The process of hypotheses testing and conclusions are presented as under:-

Continued ---
(76)

KNOWLEDGE

- Ho 1 (K - 1) There is no difference in the four Approaches of Teaching Population Education with regard to gain in Population Education Knowledge.
- Ho. 2 (K - 2) The gain in Population Education is not affected by residential background i.e. rural or urban habitat of students.
- No. 3 (K - 3) The gain in Population Education Knowledge is not affected by the sex of the students.
- No. 4 (K - 4) The gain in Knowledge of Population Education is not affected by the interaction patterns among the Teaching Approaches, residential background and sex of the students.

The above hypotheses were tested through three way analysis of variance using residential background and sex as the conjunct variables alongwith the teaching approach variable. The results of ANOVA are presented in table 1 (A) below :-

TABLE . 1 (L) Analysis of Variance on Knowledge in
Population Education on the basis of
Teaching Approaches X Residential
Background X Sex

Source of Variation	df	SS	MSS	F
Approaches of Teaching	3	381.80	127.27	5.57**
Residential Background (Rural - Urban)	1	51.32	51.32	2.24
Sex of the Students (Boys - Girls)	1	55.93	55.93	2.45
Approaches X Residence	3	1802.46	600.82	26.29**
Approaches X Sex	3	112.57	37.52	1.64
Residence X Sex	1	46.23	46.23	2.02
Approaches X Residence X Sex	3	92.50	30.83	1.35
Error	825	18852 .54		
Total	840			

** Significant at 0.01 level

for df = 1/825, F.05 = 3.84 ; F.01 = 6.64

for df = 3/825, F.05 = 2.60; F.01 = 3.78

It is evident from the Table.1 (L) that of the seven F - ratios, only two are significant namely for Approaches of Teaching (F = 5.57) at .01 level and another for two way interaction between Residential background X Approaches of Teaching (F = 26.29) beyond .01 level.

As such -

- Ho . 1 (K - 1) for the null effect of Approaches of teaching Population Education stands rejected.
- Ho. 2 (K - 2) for the null effect of Residential background on knowledge of Population Education is accepted.
- Ho.3 (K - 3) for the null effect of sex on Knowledge of Population Education is accepted.
- Ho.4 (K - 4) for the null effect of interaction of Approaches with residential background and sex of the students is partially rejected.
only for Residential background X Approaches.
Largely, it is accepted in relation to Approaches X Sex, and Residential background X Sex. It is also accepted in relation to Approaches X Residential background X Sex interaction.

In view of the significant results, further detailed analysis was done to identify the significant contrasts using Scheffe's 't' technique. Results of the contrasts for detailed analysis under Ho - 1 (K - 1) are presented in Table 1 (B).

TABLE - 1 (B)

Approach	Teacher Led	Self Learning	Peer Group Discussion	Mass Media
N	247	191	203	200
Mean	4.14	4.48	5.24	5.44
Contrasts ($\chi^2 = 22.85$)				
Teacher Led	..	0.74	2.44*	2.86**
Self Learning	..	..	1.85	2.00*
Peer Group	..	..	..	0.42
* significant at .05 level ** significant at .01 level				

The following results are evident from the above table.

Six contrasts in all among the four approaches were studied of which three were found significant as below:-

- (i) The Mass Media Approach (Mean = 5.44) emerged as the most effective approach significantly better than the Teacher Led Approach (Mean = 4.14) as well as Self Learning Approach (Mean = 4.48) The first contrast is significant at .01 level ($t = 2.86$) and the second at .05 level ($t = 2.00$).
- (ii) The Peer Group Discussion Approach (Mean = 5.24) also emerged as more effective than the Teacher Led Approach (Mean = 4.14). The contrast is significant at .05 level ($t = 2.44$).

Viewed on the whole, the Teacher Led Approach and the Self Learning Approach emerged almost equivalent. On the other hand, the Peer Group Discussion and the Mass Media Approaches emerged more effective than the above two. Mass Media being the better of the two.

No. 4 (K - 4) Regarding the interactions only one two way interaction between Residential background and Teaching Approaches was found significant. The details of contrasts, six each in the rural and urban settings and four between the settings are given in the Table 1 (C)

TABLE 1 (C) APPROACHES OF TEACHING X RESIDENTIAL BACKGROUND

		A P P R O A C H E S			
<u>Habitat</u>		<u>Teacher Led</u>	<u>Self Learning</u>	<u>Peer Group</u>	<u>Mass Media</u>
<u>Rural</u>	N	119	63	115	115
	Mean	3.64	5.65	6.37	2.72
<u>Urban</u>	N	128	128	88	85
	Mean	4.61	3.91	3.77	9.13

Contrasts

($F^2 = 22.85$)

A. Approaches in Rural Setting -

	<u>Teacher Led</u>	<u>Self Learning</u>	<u>Peer Group</u>	<u>Mass Media</u>
Teacher Led	..	2.70 **	4.37 **	1.47
Self Learning	0.96	3.91 **
Peer Group	5.79 **

B. Approaches in Urban Setting -

Teacher Led.	..	1.17	1.27	6.77 **
Self Learning	..	..	0.21	7.79 **
Peer Group	7.37 **

C. Rural - Urban Differences in Approaches .

R ~ U	1.59	2.34 *	3.84 **	9.37 *
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Following conclusions can be drawn from the contrasts in the above Table :

Rural Setting : The four approaches clubbed into two pairs, the Self Learning (Mean = 5.65) and the Peer Group Discussion (Mean = 6.57) Approaches emerged as the effective approaches; whereas the Teacher Led (Mean = 3.64) and the Mass Media (Mean = 2.72) approaches were found to be comparatively ineffective. Peer Group & Self Learning Approaches proved to be better than the other two beyond .01 level of significance.

Urban Setting: The scene in the urban setting was found different . Only one approach, the Mass Media approach (Mean = 9.13) emerged far superior to the rest three approaches, well beyond .01 level. The means for the remaining approaches ranged between 3.77 and 4.61 only.

Rural Urban Contrasts: Comparisons between the rural and urban settings were evident. Self Learning and Peer Group Discussion approaches were found more favourable in the rural setting, whereas the Mass Media approach was the favourite in the urban setting. The Teacher-led Approach was equally less effective in the two settings.

Ho.5 (K - 5) The Knowledge of Population Education is not affected by the number of brothers the students have.

Ho.6 (K - 6) The Knowledge of Population Education is not affected by the interaction patterns of four approaches of teaching with the number of brothers the students have.

The above hypotheses were tested by two way Analysis of Variance using number of brothers the students have as conjunct variable alongwith the teaching approach variable. The results of ANOVA are presented alongwith the various sub-group means in Table 2 (A)

TABLE 2 A : Sub-Group Means on Population Education Knowledge by Approach X No. of Brothers

A P P R O A C H E S							
No. of Brothers.		Teacher Led.	Self Learning	Peer Group	Mass Media	Total	
1 to 2	Mean	27	4.47	7.55	6.01	5.56	
	N	161	139	147	144	591	
3 to 5 or more	M	3.41	4.21	5.42	4.62	4.31	
	N	80	52	54	56	242	

2. B. Analysis of Variance by Approach X No. of Brothers

Sources of Variation	df	SS	MSS	F
Approach	3	651.82	217.27	9.50**
No. of Brothers	1	261.89	261.89	11.45**
Approaches X No. of Brothers	3	85.63	28.54	1.25
Error	823	18820.11	22.87	
Total	830			

** Significant at .01 level.

From the Table 2 (B) above, it is evident that out of the three F - ratios, two are significant at .01 level. One, for Approaches of Teaching ($F = 9.50$) has already been discussed under Hypothesis K (1). Besides the F- ratio for the number of brothers of the students is also significant ($F = 11.45$) beyond .01 level, whereas the F - ratio (1.25) for two way interaction of Approaches with the number of brothers is not significant. As a result of this

Ho.5 (K - 5) about the null effect of no. of brothers on Knowledge of population education stands rejected.

Contrariwise,

Ho.6 (K - 6) regarding the interaction between Approaches and number of brothers of the students, the hypothesis is accepted, since $F = 1.25$ is not significant even at .05 level.

.6

Specific contrast between the two groups of students having two or less brothers and having more than two brothers in view of the significant difference can be located in the above Table 2 (A) under the column " Total ". The mean for the less brother group is 5.56 and for the more-brother group is 4.31 indicating that students with less number of brothers demonstrated more knowledge of population education in comparison with their counterparts.

- Ho. 7 (K - 7) The Knowledge of Population Education is not affected by the number of sisters the students have.
- Ho.8 (K - 8) The Knowledge of Population Education is not affected by the interaction between Approaches of teaching and the number of sisters the students have.

These hypotheses were tested by two way ANOVA using number of sisters the students have, as conjunct variable alongwith the teaching approach variable. The results are given in Table 3.

TABLE 3 (A) Analysis of Variance in Knowledge in Population Education due to Approaches X No. of Sisters.

Source of Variation	df	SS	MSS	F
Approach	3	385.63	128.54	4.90**
No. of Sisters	1	140.76	140.76	5.37**
Approach X No. of Sisters.	3	341.49	113.83	4.34**
Error	825	21637.17	26.23	
Total	832			

** Significant at .01 level

* Significant at .05 level

From the above Table 3 (A), it is found that all the three F - ratios are significant beyond .01 level of significance, including the effect of Approaches already discussed. The effect of number of sisters on Knowledge ($F = 5.37$) is significant at .01 level. Thus $H_0.7$ ($K - 7$) is rejected as there is significant effect on Knowledge of Population Education in relation to number of sisters the students have. Similarly the interaction between the Approaches of Teaching Population Education and the number of sisters ($F = 4.34$) was found significant at .01 level. $H_0.8$ ($K - 8$) of the interaction stands rejected.

For further details in regard to assess the effect of number of sisters the students have, on the knowledge gained in population education ($H_0 - 7$), the means of the two groups are presented in Table 3 (B) below:-

TABLE 3 (B) : ANOVA Effect on Knowledge
by No. of Sisters

<u>No. of Sisters</u>	<u>N</u>	<u>Mean</u>
Two or less	591	4.64
More than two	242	5.45
633		

$$\frac{2}{\sim} = 26.23$$

$$F = 5.37$$

It is clear that students with more than two sisters excel those with two or less number of sisters. The $H_0.7$ ($K - 7$) is rejected therefore in favour of students having two or more sisters.

In view of the significant results for interaction, further analysis was done to identify the significant contrasts using Scheffe's 't' technique. Results of the contrasts follow in Table 3 (C).

TABLE 3 (C) : Contrasts due to Approaches X
No. of Sisters.

		A P P R O A C H			
No. of Sisters students have		Teacher Led	Self Learning	Peer Group	Mass Media
Two or less	N	170	142	146	133
	Mean	4.23	4.15	4.67	5.66
More than two	N	75	44	57	66
	Mean	3.93	5.64	7.67	5.15

Contrasts

$$\chi^2 = 26.23$$

A. Approaches with students having two or less no. of sisters.

	Teacher Led.	Self Learning	Peer Group	Mass Media
Teacher Led	..	0.14	0.76	2.42*
Self Learning	0.87	2.44*
Peer Group	1.61

B. Approaches with students having more than two sisters.

Teacher Led	..	1.76	4.16**	2.58**
Self Learning	..	..	1.97*	0.49
Peer Group	..	..	..	2.72**

C. Subjective (students with less than or more than two sisters)
differences in Approaches

Two or less	0.42	1.69	3.75*	0.66
- VS -				
More than two				

* p = .05

** p = .01

From the above Table 3 - C we draw the following inferences:-

1. In regard to students with two or less sisters, the Mass Media Approach was found to excel Teacher Led ($t = 2.42$) and Self Learning ($t = 2.44$) approaches.
2. With students having more than two sisters, the Peer Group Approach emerged as the most effective, better than the Teacher Led Approach ($t = 4.16$), Self Learning ($t = 1.97$) and the Peer Group Approach ($t = 2.72$). The Mass Media Approach ($t = 2.58$) was also found to be more effective than the Teacher Led Approach and Peer Group ($t = 2.72$).
3. Between the two groups students having less or more sisters, four contrasts were studied for the approaches and only one was found significant. The Peer Group Approach proved to be more facilitating with students having more than two sisters. Other approaches proved to be equally effective, with the two groups.

Ho.9 (K - 9) Mother's education has no effect on the Knowledge of Population Education of the students.

Ho.10 (K - 10) The Knowledge of Population Education among the students is not affected by the interaction patterns of approaches with the levels of their mother's education.

The Ho.9 and Ho.10 were tested through two way Analysis of Variance using Mother's Education as a conjunct variable alongwith the teaching approaches variable. The results of ANOVA are given in TABLE 4.4.

TABLE. 4.4 : Analysis of Variance in Knowledge of Population Education due to Approaches X Mother's Education.

Source of Variation	df	SS	MSS	F
Approaches of Teaching	3	236.05	78.68	3.21*
Mother's Education	2	106.02	53.01	2.16
Approaches X Mother's Education.	6	411.72	68.62	2.80*
Error	884	21673.72	24.52	

* Significant at .05 level

From the above Table it is evident that besides the already discussed Approaches of Teaching, two F - ratios were computed for the two Hypotheses Ho.9 and Ho.10. The F- ratio for the effect of mother's education is insignificant (2.16) but the effect of interaction of mother's education with the approaches is significant (F = 2.80) at .05 level. As such,

Ho.9 (K = 9) for null effect of Mother's education on Knowledge of Population Education is accepted, and Ho.10 (K = 10) for null effect of the interaction of Approaches in relation to mother's education stands rejected.

In view of the significant results for interaction, further analysis was done to identify the significant contrasts using Scheffe's 't' technique. Results of the contrasts are given in Table 4 (B).

TABLE : 4 (B) : Contrasts of Approaches X Educational Level of Mothers

A P P R O A C H					
Level of Mother's Education		Teacher Led	Self Learning	Peer Group	Mass Media
Illiterate	N	104	82	76	66
	Mean	4.11	4.22	5.47	3.98
School Education	N	134	89	113	113
	Mean	4.07	4.76	5.56	5.37
College Education	N	9	21	14	31
	Mean	5.00	3.80	4.86	9.06

Contrasts

$$\chi^2 = 24.52$$

A. Approaches with students whose mothers are illiterate

	Teacher Led	Self Learning	Peer Group	Mass Media
Teacher Led	..	0.15	1.82	0.17
Self Learning	1.85	0.29
Peer Group	1.79

B. Approaches with students whose mothers have education upto School level.

	Teacher Led	Self Learning	Peer Group	Mass Media
Teacher Led	..	1.02	2.36*	2.00
Self Learning	1.14	0.85
Peer Group	0.43

C. Approaches with students whose mothers have education upto College level.

	Teacher Led	Self Learning	Peer Group	Mass Media
Teacher Led	..	0.61	0.07	2.16*
Self-Learning	0.62	3.76**
Peer Group	2.64**

D. Differences in Approaches due to Mother's Education

Illiterate ~ School Edu.	0.66	0.71	0.12	1.78
Illiterate ~ College Edu.	0.52	0.35	0.42	4.70**
School Edu ~ College Edu.	0.54	0.80	0.52	3.65**

The results derived from the above analyses are as Below:-

- A. There is no differential effect of the approaches on the knowledge of Population Education of the students whose mothers are illiterate.
- B. Peer Group Discussion Approach ($t = 2.36$) and Mass Media Approach ($t = 2.00$) are found to be more effective than the Teacher Led Approach in case of students whose mothers are educated upto School level.
- C. Mass Media Approach emerged as the only most effective approach, more superior to the Teacher Led ($t = 2.15$), Self Learning ($t = 3.76$) and the Peer Group ($t = 2.64$) approaches in case of the students whose mothers are educated upto College level .
- D. On studying the differences in knowledge with regard to each of the four approaches in relation to the different levels of education of mothers of the students, it was found that only one, viz; Mass Media Approach emerged differential. It facilitated students whose mothers had College education for more than the students whose mothers were illiterate ($t = 4.70$) or School educated ($t = 3.65$).

- Ho.11 (K - 11) Father's education has no effect on the knowledge of Population Education of the students.
- Ho.12 (K - 12) The knowledge of Population Education among the students is not affected by the interaction patterns of Approaches of Teaching with the levels of their Father's education.

Ho.11 (K - 11) and Ho.12 (K - 12) were tested two way Analysis of Variance using Father's education as a conjunct variable alongwith Approaches of Teaching variable. The result of ANOVA are shown in TABLE 5 (A)

TABLE 5 (A) : Analysis of variance of Knowledge in Population Education based on Approaches X Father's Education

Sources of Variation	df	SS	MSS	F
Approach	3	232.23	77.41	3.07**
Father's Education	2	363.75	181.87	7.21**
Approaches X Father's Education	6	724.74	120.79	4.79**
Error	820	2071.62	25.12	
Total	831			

** Significant at .01 level

From the above table, it is evident that all the three F-ratios are significant at .01 level. The first (for the effect of approaches) has already been discussed. The second shows that father's education impinges significantly on the knowledge of students in population education (F = 7.21) and therefore Ho.11 stands rejected.

Similarly the interaction of Approaches with Father's Education is found to have significant effect ($F = 4.79$) at .01 level on the Knowledge of students in population education. As such Ho.12 ($K = 12$) for null effect of interaction of Approaches in regard to Father's Education is also rejected.

In view of the significant results, further analysis was attempted to identify the significant contrasts using Sheffe's 't' technique. The results of the contrasts based on varying levels of father's education are given in TABLE 5 (B)

TABLE 5 (B) : Contrasts with regard to Father's Education on Knowledge of Population Education.

<u>Level of</u>	<u>N</u>	<u>Mean</u>
<u>Father's Education</u>		
Illiterate	142	3.50
School Educated	497	4.87
College Educated	193	5.48
<u>Contrasts</u>		
2		
$\chi^2 = 25.21$		
Illiterate Father ~ School Education	$F = 2.85^{**}$	
Illiterate Father ~ College Education	$F = 3.57^{***}$	
School Education ~ College Education	$F = 1.43$	

From the above analysis it is clear that the two significant contrasts belong to students whose fathers were illiterate. A look at the means indicates that children of illiterate fathers proved to be inferior in their population education knowledge to those of school educated fathers ($t = 2.85$) as well as to those of College educated fathers ($F = 3.57$). The Ho.11. therefore, stands rejected against the students whose fathers were illiterate.

Sheffe's 't' technique was further employed to determine the contrasts based on interaction of the four approaches of teaching with the levels of education of the father. The TABLE 5 (C) shows the various contrasts in this regard.

TABLE 5 (C) : Contrasts based on Approaches X Levels of Father's Education

		A P P R O A C H			
		Teacher Led	Self Learning	Peer Group	Mass Media
<u>Level of Father's Education</u>					
Illiterate	N	33	44	37	28
	Mean	3.12	3.66	4.46	2.46
School Education	N	158	109	126	104
	Mean	4.26	4.91	6.20	4.50
College Education	N	53	32	40	68
	Mean	4.45	3.34	4.40	7.93

Contrasts

$$\chi^2 = 25.21$$

A. Approaches with students whose father is illiterate

Teacher Led	..	0.47	1.12	0.51
Self Learning	..	..	0.71	0.99
Peer Group	..	..	..	1.59

B. Approaches with students whose father is School educated.

Teacher Led	..	1.04	3.23**	0.38
Self Learning	..	..	1.96*	0.60
Peer Group	..	..	..	2.56*

C. Approaches with students whose father is College Educated.

Teacher Led	..	0.99	0.05	3.78**
Self Learning	..	..	0.89	4.29**
Peer Group	..	..	..	3.53**

D. Differences on Approaches due to level of father's education.

Illiterate Sch. Edu.	1.19	1.39	1.85	1.92**
Illiterate Coll. Edu.	1.20	0.27	0.05	4.84**
Sch. Edu. ~ Coll. Edu.	0.24	1.56	1.98*	4.40**

* Significant at .05 level

* * Significant at .01 level.

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From the above table are deduced the following findings :-

- A. The knowledge of Population Education of the students whose fathers are illiterate is not affected by the approaches.
- B. Among the students whose fathers are educated upto School level, Peer Group and Discussion Approach, emerged as the most effective, better than the Teacher led ($t = 3.23$), Self Learning ($t = 1.96$) and the Mass Media ($t = 2.56$) approaches.
- C. Among the students of College Educated fathers, the Mass Media Approach proved superior to the rest three approaches excelling the Teacher Led ($t = 3.78$), Self Learning ($t = 4.29$) and Peer Group ($t = 3.53$) Approaches beyond .01 level of significance.
- D. As far as the contrasts between the levels of father's education are concerned, it was found that the Peer Group approach facilitated students of school educated fathers than those of college educated fathers ($t = 1.98$) whereas the Mass Media approach facilitated students of College educated fathers in comparison to the other two groups ($t = 4.84, 4.40$).

ATTITUDES

Ho.13 (A - 1) The four Approaches of Teaching Population Education make no difference in regard to the development of Attitudes.

Ho.14 (A - 2) The development of Attitudes is not affected by residential background i.e. rural or urban habitat of students.

Ho.15 (A - 3) The development of Attitudes is not affected by the sex of the students.

Ho.16 (A - 4) The development of Attitudes about Population Education is not affected by the interaction among the four Approaches of Teaching, Residential background and sex of the students.

The above hypotheses were tested through three way analysis of variance using residential background and sex as the conjunct variables alongwith the Teaching Approach Variable. The ANOVA are presented in Table 6.

TABLE : 6 : ANOVA on Attitudes based on
Approaches X Residential Background
X Sex

Means also may be given, as in tables later.

Sources of Variation	df	SS	MSS	F
Approaches of Teaching	3	2327.36	775.79	2.54
Residential Background	1	752.86	752.86	2.46
Sex	1	285.01	285.01	1
Approaches X Residence	3	506.81	168.94	1
Approaches X Sex	3	1713.62	571.21	2.86
Residence X Sex	1	227.77	227.77	1
Approaches X Residence X Sex	3	1017.6	339.2	1.11
Error	825	252985.24	306.65	
Total	840			

It is obvious from the above Table that of the seven F - ratios, none is significant.

As such

Ho.13 ($\Delta = 1$) for null effect of Approaches of Teaching on Attitudes is accepted.

($F = 2.54$ not significant) ;

Ho.14 ($\Delta = 2$) for the null effect of Residential background on Attitudes is also accepted.

($F = 2.46$ not significant).

Ho.15 ($\Delta = 3$) as regards the null effect of sex of the students on Attitudes is also accepted

($F = 1.00$) and finally.

Ho.16 ($\Delta = 4$) for the null effect of interaction of Approaches with residential background and sex of the students is accepted as well ($F = 1.11$).

As all the Ho.13 to 16 have been accepted no further analysis was needed to establish contrasts.

Ho.17 (A - 5) The Attitude towards population education is not affected by the number of brothers the students have.

Ho.18 (A - 6) The Attitudes towards Population Education are not affected by the interaction patterns of Approaches of Teaching with the number of brothers the students have.

The above hypotheses were tested by two way Analysis of variance using number of brothers the students have, as conjunct variable alongwith the Teaching Approach Variable. The results of ANOVA are given in TABLE 7.

TABLE 7 : Attitudes by Approaches X No. of brothers.

		A P P R O A C H			
No. of Brothers		Teacher Led	Self Learning	Poor Group	Mass Media
One or Two	Mean	9.39	8.72	9.70	11.21
	N	161	139	147	145
Three or more	Mean	12.11	8.33	7.18	14.83
	N	80	52	54	53

Summary of ANOVA				
Sources of Variation	df	SS	MSS	F
Approaches	3	2353.69	784.56	2.47
No. of Brothers	1	122.21	122.21	†
Approaches X No. of brothers.	3	1001.00	333.67	1.05
Error	823	26147.10	317.64	
Total	830			

From the above Table we find that of the three F - ratios none is significant. The first having been discussed earlier under Ho.13.

Ho.17 (A - 5) for null effect of number of brothers is accepted ($F = 2.47$ not significant) as well as the

Ho.18 (A - 6) for null effect on Attitudes of the interaction of number of brothers the students have, the Approaches of Teaching is accepted. ($F = 1.05$ not significant).

As all the hypotheses regarding effect of number of brothers on attitudes have been accepted no further analysis was attempted.

Ho.19 (A - 7) The Attitudes are not affected in relation to number of sisters the students have.

Ho.20 (A - 8) The Attitudes on Population Education are not affected by the interaction patterns of Approaches of Teaching with the number of sisters the students have.

The above hypotheses were tested by two way ANOVA using number of sisters the students have, as conjunct variable alongwith the teaching approaches variable. The results are shown in Table- 8.

TABLE - 8 : Means and Analysis of Variance
of Attitudes by Approaches X
No. of Sisters.

A P P R O A C H E S					
No. of Sisters		Teacher Led	Self Learning	Peer Group	Mass Media
One or Two	Mean	11.43	8.08	10.14	12.17
	N	170	142	146	133
Three or More	Mean	10.79	9.20	9.00	12.53
	N	77	46	59	68

Summary of ANOVA

Source of Variation	df	SS	MSS	F
Approaches of Teaching	3	1348.46	449.49	1.54
No. of Sisters	1	0.83	0.83	1
Approaches X No. of sisters.	3	127.43	42.48	1
Error	825	241367.12	292.57	
Total	832			

From the above Table it is found that all the three F - ratios are not significant. The first being already discussed, Ho.19 (4 - 7) for the null affect on attitudes in relation to the number of sisters is accepted (F = 1.54 not significant).

Similarly , Ho - 20 (4 - 8) for the null effect on Attitudes by the interaction of patterns of Approaches of Teaching with the number of sisters the students have is also accepted (F = < 1).

As both the above hypotheses are accepted, no further analysis was needed for locating any contrasts.

Ho.21 (4 - 9) The Attitudes of the students are not affected by the level of their Mother's Education.

Ho.22 (4 - 10) The Attitudes of the students are not affected by the interaction of Approaches of Teaching Population Education with the education of students' mothers.

Ho.21 and Ho.22 (4 - 9 and 4 - 10) were tested through two way analysis of variance using Mother's education as conjunct variable alongwith the Teaching Approaches Variable. The results are given in Table 9.

TABLE - 9 : Means and Analysis of Variance of
Attitudes by Approaches X Mother's Education

A P P R O A C H E S				
Mother's Education	Teacher Led	Self Learning	Poor Group	Mass Media
Illiterate	Mean 13.05	7.41	9.54	11.82
	N 104	82	76	66
School Education	Mean 8.07	9.01	9.79	11.80
	N 134	89	113	103
College Education	Mean 17.89	9.14	6.00	14.68
	N 9	21	14	31

Summary of ANOVA

<u>Sources of Variation</u>	<u>df</u>	<u>SS</u>	<u>MSS</u>	<u>F</u>
Approach	3	1998.90	666.30	2.28
Mother Education	2	361.28	180.64	< 1
Approache X Mother Education	6	1853.77	308.96	1.06
Error	884	257659.50	291.47	
Total	895			

(No. value is significant)

The above table makes it evident that none of the three F - ratios are significant. As such, the two hypotheses Ho.21 and Ho.22 for the null effect of mother's education ($F < 1$) as well as for the null effect of interaction of mother's education with approaches ($F = 1.06$) stand accepted. No further analysis was required therefore.

Ho.23 (A - 11) The Attitudes are not affected by the level of Education of students' fathers' .

Ho.24 (A - 12) The Attitudes of the students are not affected by the interpretation of Approaches of Teaching Population Education with the Father's education.

Ho.23 and Ho.24 (A - 11 and A - 12) were tested by two way analysis of variance using Father's Education as conjunct variable alongwith the Teaching Approaches Variable. The results are given in TABLE -10.

TABLE - 10 : Means and Analysis of variance of Attitudes by Approaches X Father's Education.

A P P R O A C H E S					
	Teacher Led	Self Learning	Peer Group	Mass Media	
Illiterate	Mean 11.37	8.52	6.35	9.14	
	N 33	44	37	28	
School Education	Mean 11.37	9.26	9.58	12.04	
	N 158	109	126	104	
College Education	Mean 10.13	7.94	9.97	13.04	
	N 53	32	40	68	

(No Response from 9)

Summary of ANOVA

Source of Variation	df	SS	MSS	F
Approaches of Teaching	3	1119.31	373.10	< 1
Father's Education	2	373.10	186.55	< 1
Approaches X Father's Education	6	623.49	103.91	< 1
Error	820	325210.44	396.60	
Total	831			

(No value is significant)

It is quite clear from the above table that all the F - ratios are less than one and therefore are not significant.

As such -

Ho.23 (A - 11) for null effect of Father's Education on the development of attitudes is accepted.

Similarly, Ho.- 24 (A - 12) for the null effect on Attitudes of the students by interaction of Approaches of Teaching Population Education with Father's Education is also accepted
(F = < 1)

As the null hypotheses have been accepted, no further analysis was done.

FFS

- Ho.25 (B - 1) In regard to developing Beliefs, there is no difference among the Approaches of Teaching Population Education.
- Ho.26 (B - 2) The residential background has no effect on the Beliefs about Population Education.
- Ho.27 (B - 3) The sex of the students has no effect on their beliefs regarding Population Education.
- Ho.28 (B - 4) The beliefs are not affected by the interaction of Approaches of Teaching Population Education, residential background and sex of the students.

To test the above hypotheses three way Analysis of variance using residential background and sex of the students as conjunct variable alongwith the Approaches of Teaching variable was done. The results of ANOVA are presented in TABLE 11.A.

TABLE : 11. (A) : Analysis of Variance on Beliefs in Population Education on the basis of Approaches of Teaching X Residential background X Sex .

Source of Variation	df	SS	MSS	F
Approaches of Teaching	3	118.85	39.62	1.75
Residential Background	1	21.07	21.07	< 1
Sex	1	348.61	348.61	15.38**
Approaches X Residence	3	137.93	45.98	2.03
Approaches X Sex	3	249.23	83.08	3.66**
Residence X Sex	1	12.72	12.72	< 1
Approaches X Residence X Sex	3	229.36	76.45	3.37*
Error	825	10705.37	22.67	
Total	840			

** Significant at .01 level
* Significant at .05 level

It is evident from the above table that of the seven F - ratios one $F = 15.38$ is significant at .01 level and two F-ratios , $F = 3.66$ and $F = 3.37$ are significant at .05 level. The first one is for the effect of sex on beliefs while the second is for two way interaction between Approaches and sex. The third F = ratio is for three way interaction among Approaches, residential background and the sex of the students . As such -

- No.25 (B - 1) for the null difference due to Approaches - of Teaching in regard to beliefs is accepted ($F = 1.75$ not significant).
- No.26 (B - 2) for the null effect of residential background on beliefs about Population Education is also accepted ($F = < 1$)
- No.27 (B - 3) for the null effect of sex of the students on their beliefs in Population Education is rejected ($F = 15.38$) significant at .01 level).
- No.28 (B - 4) . for the null effect of interaction among approaches of teaching, residential background and sex of the students is partially rejected, specifically in two instances (i) two way interaction between approaches and sex, and (ii) three way interaction among the approaches, residential background and sex of the students.

In view of the significant results, further analysis was attempted to determine the differences in the belief patterns of various groups. The contrastive analysis in regard to Ho.27 (B - 3), namely the difference in the belief patterns of Boys and Girls in regard to Population Education is presented in Table 11 (B) below:-

TABLE 11 (B) : Contrasts on Beliefs based on Sex

<u>Sex</u>	<u>N</u>	<u>Mean</u>
Boys	507	2.88
Girls	337	3.25

$$\chi^2 = 22.67$$

$$F = 15.38 \text{ significant at } .01$$

It is evident that the beliefs of girls (Mean = 3.25) are more favourable toward population education than those of boys (Mean = 2.88). The Ho.27 (B - 3) therefore is rejected in favour of girls.

The contrasts based on the two way interaction of approaches and sex are presented in Table 11 (C).

TABLE 11 (C) : Contrasts by Approaches X Sex

Sex		A P P R O A C H			
		Teacher Led	Self Learning	Peer Group	Mass Media
BOYS	N	134	89	146	135
	Mean	3.08	3.44	2.07	3.14
GIRLS	N	113	102	57	65
	Mean	3.91	3.62	3.14	1.64

Contrasts

$$2 = 22.67$$

A. Approaches in relation to Boy's Beliefs

Teacher Led ..	0.55	1.77	0.10
Self Learning ..	..	2.14*	0.46
Peer Group ..	..	..	1.88

B. Approaches in relation to Girls' Beliefs.

Teacher Led ..	0.45	1.00	3.07**
Self Learning..	..	0.61	2.60*
Peer Group	1.74

C. Sex-differences in Approaches

Boys ~ Girls	1.36	0.26	1.45	2.08*
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From the above table of contrast, it is found that for boys Self-Learning Approach was significantly better than the Peer Group Discussion approach ($t = 2.14$). All other pairs are equivalent.

With regard to Approaches in relation to beliefs among the girls, the Teacher Led and Self-Learning Approaches showed better impact than the Mass Media Approach ($t = 3.07, 2.60$ respectively). As far as the sex-contrasts were concerned, the Mass Media Approach proved more helpful to the girls in developing beliefs about Population Education.

Analysis for the contrasts based on three way interaction is presented in Table 11 (D) below:-

TABLE - 11 (D) : Contrasts based on Approaches X Sex X Residence (Habitat)

Habitat	Sex		Teacher Led	Self Learning	Peer Group	Mass Media
<u>RURAL</u>	Boys	N	81	50	89	90
		Mean	3.21	4.24	1.99	2.55
	Girls	N	38	13	26	25
		Mean	4.68	0.85	3.65	1.52
<u>URBAN</u>	Boys	N	53	39	57	45
		Mean	2.89	2.41	2.21	4.64
	Girls	N	75	89	31	40
		Mean	3.52	4.02	2.71	1.72

Contrasts

$$F = 22.67$$

A. Approaches for Rural Boys						
Teacher Led	..	0.83	1.67	0.90		
Self Learning	..	..	2.68**	2.01		
Peer Group	..	..	..	0.79		
B. Approaches for Rural Girls.						
Teacher Led	..	2.50*	0.85	2.57*		
Self Learning	..	..	1.73	0.41		
Peer Group	..	..	..	1.60		
C. Approaches for Urban Boys						
Teacher Led	..	0.48	0.75	1.82		
Self Learning	..	..	0.20	2.14*		
Peer Group	..	..	..	2.56*		
D. Approaches for Urban Girls.						
Teacher Led	..	0.67	0.79	1.94*		
Self Learning	..	..	1.32	2.54		
Peer Group	..	..	..	0.87		
E. Sex - Residence (Habitat) Differences in Approaches.						
Rural Boys ~ Urban Boys	0.38	1.79	0.27	2.49		
Rural Boys ~ Rural Girls	1.56	2.29*	1.57	0.95		
Urban Boys ~ Urban Girls	0.74	1.77*	0.47	2.83**		
Rural Girls ~ Urban Girls	1.22	2.25	0.74	0.17		

From the above contrasts, the following conclusion are drawn for developing beliefs in Population Education :-

- A. For Rural Boys, Self Learning Approach excels Peer Group ($t = 2.68$) and Mass Media ($t = 2.01$) approaches.
- B. In case of Rural Girls, Teacher Led Approach excelled Self-Learning ($t = 2.50$) and Mass Media ($t = 2.57$) approaches.
- C. For Urban Boys, Mass Media Approach excelled the Self Learning ($t = 2.14$) and Peer Group ($t = 2.56$) discussion approaches.
- D. In regard to Urban Girls, Self Learning Approach proved to be more effective than Mass Media Approach ($t = 2.54$).
- E. For Sex- Residence contrasts, Mass Media Approach facilitated Urban Boys more than the Rural Boys as well as the Urban Girls contrarily -
Self Learning Approach was found to be obstructive for rural girls, when compared to rural boys as well as urban girls.

Ho. 29 (B = 5) The number of brothers do not affect the beliefs of the students.

Ho. 30 (B = 6) The beliefs of the students do not differ by interaction of Approaches of Teaching Population Education with the number of brothers they have.

For testing the above Ho.29 and Ho.30 (B = 5 and B = 6) two ways analysis of variance using number of brothers as conjunct variable along with Approaches of Teaching as variable was tried out. The results of ANOVA are given in TABLE (12).

TABLE 12 : ANOVA on beliefs by Approaches
X No. of brothers

Source of Variation	df	SS	MSS	F
Approaches of Teaching	3	165.45	55.15	2.40
No. of brothers	1	18.29	18.29	< 1
Approaches X No. of brothers	3	82.31	27.44	1.19
Error	823	18901.45	22.97	
Total	830			

(No Value is significant)

From the above table, it is clear that no F - value is significant. The first has already been discussed under Ho.25 (D-1). The two hypotheses under test, Ho.29 (B - 5) for null effect of the number of brothers and Ho.30 (B - 6) for the null effect of interaction are accepted.

- Ho.31 (B - 7) The number of sisters do not affect the beliefs of the students regarding Population Education.
- Ho.32 (B - 8) The beliefs of the students do not differ by interaction of Approaches of Teaching Population Education with the number of sisters they have.

The above hypotheses were tested by two way analysis of variance using number of sisters as conjunct variable alongwith Approaches of Teaching as variable. The result of ANOVA are presented in Table 13.

TABLE - 13 : ANOVA on beliefs by Approaches X
No. of sisters

Sources of variation	df	SS	MSS	F
Approaches of Teaching	3	155892	53.31	2.25
No. of sisters	1	0.83	0.83	< 1
Approaches X No. of sisters	3	33.32	11.11	< 1
Error	825	19556.29	23.70	
Total	832			

No. of value is significant

As no value of F in the above table is significant, therefore both the hypotheses Ho.31 and Ho.32 for null effect are accepted.

Ho.33 (D - 9) The beliefs are not affected by the level of Mother's Education.

Ho.34 (D - 10) The beliefs of the students are not affected by the interaction of Approaches of Teaching Population Education with the level of education of students' mothers.

Ho.33 and Ho.34 (D - 9 and D - 10) were tested through two way analysis of variance using mothers' education as conjunct variable along with the Teaching Approaches variable. The results are given in Table 9.

TABLE.9 : Means and Analysis of Variance of Beliefs by Approaches X Mothers' Education.

		A P P R O A C H E S			
Level of Mother's Education		Teacher Led	Self Learning	Peer Group	Mass Media
Illiterate	Mean	4.03	4.66	3.17	2.28
	N	97	41	36	25
School Educated	Mean	3.10	2.91	2.15	3.28
	N	137	110	129	104
College Educated	Mean	2.36	2.19	3.27	2.13
	N	11	31	37	68

SUMMARY OF ANOVA.

Sources of Variation	df	SS	MSS	F-Value
Approach	3	34.67	11.56	0.50
Mother's Education	2	90.06	45.03	1.95
Approach X Mother's Education	6	154.22	25.70	1.11
Error	814	12776.49	23.07	
Total	824			

No. value is significant

It is evident from the above table that none of the three F - ratios is significant. As such the two hypotheses Ho.33 and Ho.34 for the null effect of mothers' education - ($F = 1.95$) as well as for the null effect of interaction of mother's education with approaches ($F = 1.11$) stand accepted. No further analysis therefore was attempted.

- Ho.35 (E - 11) The beliefs are not affected by the level of education of students' fathers.
- Ho.36 (D - 12) The beliefs of the students are not affected by the interaction of Approaches of Teaching Population Education with the Father's Education.

The Ho.35 and Ho.36 were tested by two way analysis of variance using Fathers' Education as conjunct variable alongwith the Teaching approaches variable. The results are given in TABLE.15.

TABLE.15 : Means and Analysis of Variance of
Attitudes by Approaches X Fathers'
Education.

A P P R O A C H E S					
Level of Father's Education.		Teacher led	Self Learning	Peer Group	Mass Media
Illiterate	Mean	3.63	3.36	2.74	2.42
	N	38	80	70	66
School Educated	Mean	3.66	2.72	2.44	3.14
	N	153	90	113	103
College Educated	Mean	3.43	4.85	3.77	2.29
	N	53	20	13	31

Summary of ANOVA

Sources of Variation	df	SS	MSS	F
Approaches	3	92.18	30.73	1.31
Fathers' Education	2	36.96	18.48	0.79
Approaches X Father's Education	6	124.89	20.18	0.89
Error	818	19118.16	23.37	
Total	829			

No. F - Value is significant.

The above table makes it evident that no F - ratio is significant. As such Ho.35 (D - 11) for null effect of Father's education on the formation of beliefs of the students is accepted. ($F = < 1$)

Similarly Ho.36 (D - 12) for the null effect on beliefs of the students by interaction of Approaches of Teaching Population Education with Fathers' Education is also accepted ($F = < 1$)

No further analysis was tried as the two null hypotheses were accepted.

Chapter - FIVE

Conclusions - PP 117 - 120

CONCLUSIONS

The Experiment of Teaching Population Education in the Classrooms to the students (Boys and Girls) of classes IX and X of schools in urban and rural areas by adopting four different approaches viz; traditional Teacher led usual classroom teaching approach, Self-Learning based on programmed instruction technique, Peer-group discussion and Mass Media approach was very well carried out. The teachers who carried out the experiment were oriented in a three day workshop and were given well defined activity schedules - related to their specific approach. They were also supplied the Guide to Population Education (Hindi) to be used as basis of all the approaches. The tests of Knowledge, Attitudes and Beliefs for administering in Pre-test and also in post-test were given to them with due orientation about their proper administration. Forms for obtaining individual data of the students with regard to their sex, father's and mother's education and number of brothers and sisters they have were also supplied.

The experiment began at all places and in all approaches simultaneously but the post test was administered as per their own conveniences after the teaching part was over. As some schools had terminal tests, others had games or annual functions hence the closing schedule of the experiment could not be simultaneous.

The data sheets of individual information and the test papers of Pre-test and Post-test were called at one place in the Field Office at Bhopal where Junior Project Fellow scored the tests and tabulated the data of urban and rural schools approach-wise.

The data was statistically processed and the testing of hypotheses was carried out by adopting Analyses of variance (ANOVA) and if significant difference was found a further analysis was done by adopting Sheffer's ~~t~~-Test. On the basis of these the findings were reported with regard to Knowledge, Attitudes and Beliefs.

A summary of the findings is given here for over-all view and for presenting the important discoveries made with regard to success of different approaches with students of varied backgrounds.

These conclusions are :-

KNOWLEDGE :

1. Peer group discussion - Approach and Mass Media Approach have been equally successful.
2. Peer Group and Mass Media Approaches have been found to be better than Teacher Led Approach.
3. Mass Media Approach has excelled over the Self Learning Approach.
4. With regard to rural and urban settings of the schools and the students, it is found that Self-learning and Peer group approaches are more suitable for rural settings and Mass Media approach for urban settings.
5. In regard to gain in knowledge of Population Education it was found that students having less than two brothers and those having more than two sisters gained more knowledge than others.
6. When approaches in relation to number of sisters the students had, were compared it was found that Mass Media excelled over Teacher Led approach irrespective of number of sisters the students had. In case of students having less than two sisters Mass Media approach was found to be better than self-learning. However in case of students having more than two sisters Peer group discussion approach was better.
7. In regard to the level of Mother's education of the student there was no difference in any approach. However if mother was educated upto secondary level Peer group and Mass Media were found to be equally effective and better than teacher led approach.

If mother was educated upto College level then Mass Media approach excelled over others.

8. Considering the level of students' father's education it was found that sons of Secondary and College educated fathers gained more knowledge than others. If father was illiterate there was found to be no difference in the gain in knowledge of the students.
9. On comparing level of father's education level and Approaches of teaching on gain in the Population Education knowledge of the students it was found that the students whose fathers were educated upto secondary level benefitted most by Peer group approach while students whose fathers' were College educated were benefitted by Mass Media approach. Mass Media approach was found to be more effective if father was not illiterate. Peer group approach was found more beneficial to students whose fathers were educated upto secondary level more than those whose fathers were educated upto College level.

ATTITUDES:

10. With regard to effect of approaches on attitudes of the students, no significant difference was found on any count.

BELIEFS

11. On analysis of impact of approaches on beliefs it was found that Girls developed stronger beliefs in Population Education than boys.
12. On comparison of approaches in regard to sex of the students it was found that self-learning approach excels Peer group approach in affecting the beliefs among the boys.

Teacher led and Self-learning approaches were found to be better than Mass Media approach in regard to affecting beliefs among the girls. Mass Media approach was found to be beneficial to boys more than to girls.

13. On comparing approaches in regard to sex and habitat it was found that self learning approach excelled Peer Group and Mass Media in case of rural boys while Teacher led approach excelled self learning and Mass Media in case of rural girls. In regard to urban boys Mass Media approach excelled self learning and Peer group approaches while in regard to urban girls self learning approach excelled Mass Media approach.
14. Mass Media approach was found to be more helpful to urban boys more than rural boys and urban girls while self learning approach was more beneficial to rural boys and urban girls than to rural girls.

Those findings and conclusions will help propagators of Population Education to adopt approaches which are more effective in regard to specific needs of developing knowledge, attitudes and beliefs in regard to Population Education.

APPENDICES

- A - List of Participating Schools & Students
- B - Knowledge Test (English Translation)
- C - Attitudes Test (English Translation)
- D - Beliefs Test (English Translation)

Appendix - A

LIST OF PARTICIPATING SCHOOLS AND STUDENTS

Approach : TEACHER LED

Rural Schools

<u>Schools</u>	<u>No. of Students</u>	
	<u>Boys</u>	<u>Girls</u>
1. Govt. Boys H.S.School, Silwani	32	x
2. - Do - , Baktra	49	x
3. Govt. Girls H.S.School, Biaora	x	38
	<u>81</u>	<u>38</u>

Urban Schools

4.	Govt. Boys H.S. School, Multai	30	x
5.	" " , Khilchipur	23	x
6.	" Girls " , Multai	x	75
		<u>53</u>	<u>75</u>

Total :	<u>Sex</u>	Boys (Rural + Urban)	= 134
		Girls (Rural + Urban)	= 113

Habitat Rural = 119
Urban = 128

TOTAL : 247

Approach : SELF LEARNING

Rural:

	<u>Boys</u>	<u>Girls</u>
7. Govt. Boys H.S.School, Baktara	50	x
8. " Girls " , Kurwai	x	13
	<hr/> 50	<hr/> 13

Urban:

9. Govt. Boys H.S.School No.1, Senore	39	x
10. Govt. Girls, H.S.School, Hoshangabad	x	39
11. Govt. Girls " " , Betul	x	50
	<hr/> 39	<hr/> 89

Total :

Sex Boys (R + U) = 89
Girls (R + U) = 102

Habitat:

Rural = 63
Urban = 128

Total : 191

Approach : PEER GROUP DISCUSSION

<u>Rural</u>		<u>Boys</u>	<u>Girls</u>
12	Govt. Boys H.S. School Ashta	49	x
13	" " " , Pachore	40	x
14	" Girls " " , Ashta	x	26
		<u>89</u>	<u>26</u>

<u>Urban</u>			
15	Govt. Boys H.S. School, Multai	25	x
16	" " " , Itarsi	32	x
17	" Girls " " , Rajgarh	x	31
		<u>57</u>	<u>31</u>

Total :

Sex : Boys (R + U) = 146
Girls (R + U) = 57

Habitat : Rural = 115
Urban = 88

TOTAL = 203 ✓

Approach : MASS MEDIA

<u>Rural</u> :		<u>Boys</u>	<u>Girls</u>
18	Govt. Boys H.S. School, Mandideep	50	x
19	" " " , Obaidullaganj	40	x
20	" Girls " , Raisen	x	25
		<u>90</u>	<u>25</u>

<u>Urban</u>			
21	Govt. Kamla Nehru Girls H.S. School, Bhopal	x	40
22	Govt. Boys H.S. School, Hashangabad	45	x
		<u>45</u>	<u>40</u>

Total :

Sex : Boys (R + U) = 135
Girls (R + U) = 65

Habitat : Rural = 115
Urban = 85

TOTAL = 200 ✓

GRAND TOTAL

<u>Approach</u>	<u>SEX</u>		<u>HABITAT</u>		<u>TOTAL</u>
	<u>Boys</u>	<u>Girls</u>	<u>Rural</u>	<u>Urban</u>	
Teacher led	134	113	119	128	247
Self Learning	89	102	63	128	191
Peer Group	146	57	115	88	203
Mass Media	135	65	115	85	200
GRAND TOTAL :	<u>504</u>	<u>337</u>	<u>412</u>	<u>429</u>	<u>841</u>

Knowledge Test

After every question four alternatives are given. You are to select the correct alternative and put a mark against a, b, c or d whichever you feel is correct.

1. What is the position of world population ?
 - (a) Decreasing
 - (b) Increasing
 - (c) Status quo
 - (d) Exploding
2. How much population of the world lives in Asian Peninsula ?
 - (a) One fourth (20%)
 - (b) One third (33%)
 - (c) Half (50%)
 - (d) Three fourth (75%)
3. Which of the following countries has more population than India ?
 - (a) Japan
 - (b) Soviet Socialist Republic of Russia
 - (c) China
 - (d) America
4. In how many years Census is held in our country ?
 - (a) 5 years
 - (b) 10 year.
 - (c) 15 years
 - (d) 20 years
5. When was the first Census held in India ?
 - (a) 1671
 - (b) 1761
 - (c) 1871
 - (d) 1911
6. If population in India decreases what will be the position of economic development plans ?
 - (a) Successful
 - (b) Unsuccessful
 - (c) Ineffective
 - (d) Standstill

7. Out of the total world land what percent is in India ?

- (a) 1.2
- (b) 2.4
- (c) 4.2
- (d) 4.8

8. What percentage of world population lives in India ?

- (a) 8.35
- (b) 11.44
- (c) 12.11
- (d) 15.53

9. Out of how many people in the world one is Indian ?

- (a) 5
- (b) 7
- (c) 17
- (d) 25

10. In how many years the population in India increases to that of Australia ?

- (a) One year
- (b) Two years
- (c) Three to five years
- (d) Five to ten years.

11. What was the literacy percentage of India in 1971 ?

- (a) 20.00
- (b) 22.33
- (c) 28.65
- (d) 29.45

12. What was the literacy percentage in 1981 ?

- (a) 28.65
- (b) 31.10
- (c) 36.17
- (d) 40.12

13. In 1981 Census which state in India had the highest literacy rate ?

- (a) Maharashtra
- (b) Kerala
- (c) Karnataka
- (d) Madhya Pradesh

14. The number of illiterates has increased in India, what is its cause ?

- (a) Lack of educational facilities
- (b) Children do not go to school
- (c) Rapid increase in the number of school going children.
- (d) Children do not get admission in schools.

15. What percentage of our population lives in the villages ?

- (a) 60
- (b) 70
- (c) 75
- (d) 80

16. What is the position of the urban population ?

- (a) Decreasing
- (b) Increasing
- (c) Increasing fast
- (d) Very much decreasing

17. In population increase at what place does our community stand ?

- (a) first
- (b) second
- (c) fourth
- (d) fifth

18. What is the per capita income (in US dollars) in India ?

- (a) 105
- (b) 108
- (c) 110
- (d) 125

19. What is the per capita income (in US Dollars) in Japan ?

- (a) 1224
- (b) 1612
- (c) 1920
- (d) 2020

20. What is the rate of economic growth in India ?

- (a) 1.1 percent .
- (b) 1.2 "
- (c) 1.4 "
- (d) 1.6 "

- 21.. What is the rate of economic growth in Japan ?
- (a) 4.2
 - (b) 5.6
 - (c) 7.7
 - (d) 9.6
- 22.. What is the need (in metres) of an average Indian for Cloth ?
- (a) 15 m.
 - (b) 18 m.
 - (c) 20 m.
 - (d) 25 m.
- 23.. How much metre cloth India produces to meet the consumer demand ?
- (a) 10 m. or less
 - (b) 11 m. to 15 m.
 - (c) 16 m. to 20 m.
 - (d) 21 m. or more
- 24.. Who contribute more to environmental pollution ?
- (a) Animals
 - (b) Birds
 - (c) Population
 - (d) Vegetation
- 25.. What is the development speed of knowledge of science and Technology ?
- (a) Ordinary
 - (b) Slow
 - (c) Fast
 - (d) Ver slow
- 26.. How many children did Lord Rama have ?
- (a) Two
 - (b) Three
 - (c) Four
 - (d) Seven
- 27.. What is the main cause of Population explosion in India ?
- (a) Reduction in Birth rate and Death rate
 - (b) Increase in Birth rate and decrease in Death Rate
 - (c) Decrease in Birth rate and increase in death rate.
 - (d) Increase in Birth and Death rates.

28. What is the cause of increasing unemployment in India ?

- (a) Lack of material resources
- (b) Lack of Industrialisation
- (c) Increase in Population
- (d) Lack of Electricity

29. Which city of Madhya Pradesh has the largest population in the State ?

- (a) Bhopal
- (b) Gwalior
- (c) Indore
- (d) Jabalpur

30. At what place is Madhya Pradesh with regard to area ?

- (a) Biggest
- (b) Second
- (c) Third
- (d) Smallest

31. At which place in India is Madhya Pradesh in regard to increase in population ?

- (a) Second
- (b) Third
- (c) Fourth
- (d) Sixth

32. Which is the most populated district in Madhya Pradesh

- (a) Dhar
- (b) Bilaspur
- (c) Raipur
- (d) Sagar

33. What is the population density per k.m. in Madhya Pradesh in 1981 ?

- (a) 73
- (b) 94
- (c) 117
- (d) 127

34. What was the population of Madhya Pradesh in 1981 (in crores)
- (a) 3.7
 - (b) 4.9
 - (c) 5.2
 - (d) 5.4
35. What percentage of population of India lives in Madhya Pradesh ?
- (a) 5.12
 - (b) 6.07
 - (c) 7.62
 - (d) 8.14
-

The average age has increased due to researches in the field of medical science. The average age in India in 1950 was 30 years. It increased to 46 years in 1971 and in 1981 it is 54 years.

36. In 1991 what is supposed to be the average age in India ?
- (a) 58 years
 - (b) 62 years
 - (c) 64 years
 - (d) 69 years
37. What will be the average age by the close of this century in year 2000 ?
- (a) 64 years
 - (b) 70 years
 - (c) 74 years
 - (d) 76 years.
-

The government and the people are making efforts to contain population explosion in our country even then in 1961 our population was 43.12 crores which increased in 1971 to 54.81 crores. The decimel increase was 24.80 percent. In 1981 population increased to 68.39 crores and growth rate came to 24.75 percent.

38. If this rate of increase continued what would be India's population in 1991 ?

- (a) 70.10 crores
- (b) 81.00 crores
- (c) 81.94 crores
- (d) 84.21 crores

39. At this rate of increase what will it be by the end of this country i.e. year 2000 ?

- (a) 85.10 crores
- (b) 95.00 crores
- (c) 95.57 crores
- (d) 98.21 crores

Every year 2.1 crore children are born in India out of which 0.8 crore die. The net increase in Indian population every year is 1.3 crore

40. What will be the increase in 10 years ?

- (a) 9.3 crores
- (b) 12.00 crores
- (c) 13.00 crores
- (d) 14.00 crores

Attitude ScaleInstructions:

Read the statements given under Item head and decide how far do you agree with it. Then record your opinion as to whether you strongly agree (SA), agree (A), somewhat agree (Somewhat A), Disagree (DA), or Strongly Disagree (SD) by putting a cross under the concerned column.

Item	SA	A	Somewhat A	D	SD
1. Increase in Population in India is a severe problem.					
2. Unemployment and increase in population are closely related.					
3. Small family is helpful in raising standard of living.					
4. The density of population is more in the developing countries.					
5. Due to population increase availability of consumer goods has become difficult					6
6. The correct remedy of Population Explosion is Population Education					
7. Population Education makes the child to understand the difference between superstition and the realities.					
8. Increasing population is increasing expenditure on education					
9. It is pride for India to have large population					
10. Humans have polluted their environment					

Item	SA	A	Somo- what	D	SD
11. To include population education in curriculum with increased workload on the student.					
12. The students should be made aware of the problems due to increase in Population.					
13. Large Population is a curse on humanity					
14. Increasing population is helpful in development of the country					
15. Children get better upbringing in small families					
16. Many students in the class facilitate learning.					
17. People must be made aware of the consequences of population explosion					
18. The population in cities increases much faster					
19. The increasing population is checked by natural calamities, epidemics, floods and earth quakes.					
20. The more education spreads the more will be the check on increase in population.					
21. The country can be self-sufficient only when the population is controlled.					
22. The standard of living becomes high with the high rate of economic growth					
23. The plans fail because the population increases beyond estimation.					

Item	SA	A	Some- what A	D	SD
24. Hoarding more than the needs is theft against the society					
25. The increasing problem of foodstuffs has become grave because of population					
26. The education for health and nutritive diet should be imparted in every school					
27. Children get nutritive diet in large families.					
28. More crowd gives liveliness to the area.					
29. Teacher can give individual attention to students if the number is less in the class					
30. The population explosion must be checked.					
31. The life is difficult in over populated villages or town					
32. By fast increasing population the country is beaten in every field.					
33. With increasing numbers people get less space for living.					
34. To advance on the path of development it is necessary to control population					
35. The country will be more secure with more population					
36. Today we do not need man power but we need atomic power					

Item	SA	A	Some- what A	D	SD
37. The birth is in God's hand and man is helpless in this					
38. When parents are busy day and night in earning, the children cannot be well looked after.					
39. The population explosion will lead to future struggles and grave consequences may have to be faced.					
40. Well planned living is possible only in small family					
41. It is must that the family should have some children					
42. The more the children in the family the merrier they are					
43. The education regarding population problems must be imparted in the Schools.					
44. Whether there are boys or girls it does not make any difference in the family					
45. To have children or not to have depends on fate.					
46. Increased population is the chief cause of malnutrition					

1

2

Item	SA	A	Somewhat A	D	SD
47. The per capita income has reduced due to population explosion.					
48. For the success of our plans it is necessary to control population.					
49. More population is helpful in raising the Gross National Income.					
50. The educational development is not fully being achieved due to huge population					

BELIEFS' TESTInstructions:

Read the statements carefully and make up your mind whether you agree with it or you do not agree. Having made up your mind put a cross in the column Agree if you agree and under Disagree if you do not agree.

Statements	Agree	Disagree
1. To contain population increase is against the phenomenon of the Nature		
2. Children are the gift of God		
3. Children may be less but should be talented		
4. Small family is the foundation of public life		
5. The population problem is as severe in the developed countries as it is in the developing countries.		
6. More hands more production		
7. Two or three children are good in the home		6
8. The crowding in rails or buses is due to increasing population		
9. Population increase raises the prices		
10. More the people more the money		
11. Population explosion is hampering our progress		
12. Pollution is natural reaction, it is not human creation		
13. The solution of food problem is control on population increase		

Statements	Agree	Disagree
14. Increasing population raises the standard of living		
15. Our main problem is poverty and not the population		
16. Allround development of a man is possible in big family		
17. The increase in urban crime is due to increase in population		
18. The big family is a place for mental tension		
19. The parents do not pay much attention to children in big families		
20. The improvement in standard of living is possible only in small family		
21. The problem of food stuffs is due to lower production		
22. The children have to suppress their desires in big families		
23. More children make the family prosperous		
24. Children develop better in small families		
25. Big family more security		
26. More population more noise		
27. Noise creates mental tensions		
28. More people earn more money		
29. More sons in the family more prestige		
30. By planting more trees and plants air is purified		
31. Children should be five or six		
32. It is good to marry in younger age		
33. The population problem can be solved by prayers and hymns to God		

Statements	Agree	Disagree
34. The human beings live healthy life by breathing fresh air.		
35. The increase in unemployment in the country is due to population increase		
36. The crowding of students in the Schools is due to increase in the number of children		
37. The balanced diet brings happiness in life		
38. Limited family unlimited prosperit prosperity		
39. More children bring fortune		
40. Less population less problems.		

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